



EXPERT ADVICE • TOP TIPS • BEST BUYS • MORE FACTS

NEW
AMIGA?
MASTER IT WITH US

AMIGA SHOPPER

From the makers of Amiga Format

LET'S GO ROBO!

We show you how to use your Amiga to control robotic devices...Education: page 60

TAP INTO TYPE

Find out why typography is essential for effective desktop publishing...DTP: page 62

CHANGE IMAGES

Is *Imagemaster* the most versatile Amiga graphics tool ever?.....Video: page 69

MOVE UP TO 3D

How to use *AMOS 3D* to produce realistic animations the easy way....AMOS: page 85

CONTROL CHAOS

Explore the fractal horizons of chaos theory with our new series.....Chaos: page 95

GET A LIFE!

Learn how to create your own Amiga-based lifeform and watch it grow.....AI: page 109

PUBLIC DOMAIN WORLD

All the very latest low-cost and no-cost software reviewed

ISSUE 1B • OCTOBER 1992 • £1.50 • YOUR DEFINITIVE GUIDE

SEEING RED?

be a **SMART** user

- Then read our special answers sections on
AmigaDos
Printers
Hard drives
Memory
DTP
Video
& Programming

Your 32 page trouble-shooting guide begins on p15

SCOOP! The A600's price is slashed! - and what's the A2200?

Future
PUBLISHING
Your guarantee of value



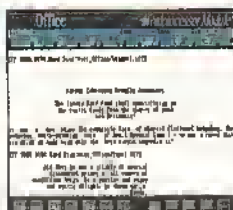
mini Office

THE PERFECT ALL-IN PACKAGE FOR YOUR HOME OR BUSINESS

**FIVE
MODULES
FOR JUST
£59.99!**



- A professional **WORDPROCESSOR** with powerful graphics capabilities and a 50,000 word spell checker. Ideal for a wide variety of correspondence and official documents.
- A flexible **SPREADSHEET** with more than 50 functions, simplifying the most complex domestic monthly budgets or commercial cash flow forecasts.
- A versatile **DATABASE** which is simple to use and powerful enough to deal with anything from basic address book functions to club membership lists and business records.
- A supremely friendly **DISC MANAGER** to make using your Amiga as painless a task as possible.
- Incredible **GRAPHICS** with more than 18 types of graphs and charts available to brighten up your presentations or make your month by month financial situation as easy to appreciate as possible. You can even make use of eye-catching 3D effects!



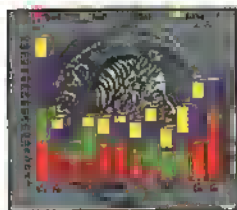
Wordprocessor: Compose a letter, check your spelling with the 50,000 word dictionary, mailmerge details from a database file, add graphics, wrap text around it, load ASCII text, highlight with bold, italic and underline... and more!



Database: Build up a versatile card Index, incorporate up to 50 fields with 70 characters each, use search and replace to modify data, do powerful multi-field sorting, perform arithmetic functions... and more!



Spreadsheet: Prepare budgets or tables, alter column widths, insert or delete columns, cut and paste data, lock blocks, choose from over 50 functions... and more!



Graphics: Enter data directly or load from the spreadsheet or database; produce pie charts with exploded segments; display bar charts side by side or stacked; overlay your graphs on an imported IFF picture; add a 3D view; add text or lines... and more!



Disc Utilities: Avoid the confusion of Workbench, create bootable files, format discs, copy files from disc to disc; make directories; delete and rename files, make multiple copies of your discs... and more!

R E L E A S E D S E P T E M B E R

europress
SOFTWARE

Europa House, Adlington Park, Macclesfield, Cheshire SK10 4NP, Tel: 0625 859333

Mini Office works on all Amigas with 1 megabyte RAM, can read Amiga IFF files and for US users, fully supports the NTSC standard.

AMIGA SHOPPER

AT A GLANCE GUIDE

To help you find what you want quickly and easily, this is a cross-referenced list of all the products and subjects covered in this month's *Amiga Shopper*. The subjects covered in *Amiga Answers* are detailed on page 15; the many PD programs covered on page 128 are listed there. The page numbers given are for the first page of the article in which the product is mentioned.

A2200	7
A4000	12
A570	7
A600	7
ADI	60
Amiga Answers	15
AmigaDOS	38,121
AMOS	85
Artificial Intelligence	109
Bulletin boards	93
Buying advice	144
Chaos	95
Comms	93
Competition	146
Desktop publishing	28,62
DTP	28,62
Education	60
For sale	119
Future Entertainment Show	82
Graphics	69
Hard drives	54
Imagemaster	69
Letters	12
Listings	126
Mail Order	111
Maxplan 4	115
Mega-Station	128
Memory	48
MIDI	77
News	7
Power Text	128
Printers	22
Product Locator	142
Programming	44
Public domain	128
QuasiMidi	77
Reader ads	119
Shareware	128
Subscriptions	102
Switchsoft I/O	60
Talking Shop	12
Typography	62
User Groups	140
Video	32,69

Are there any products or subjects you'd like us to take a look at? Well, just drop a line to:

Amiga Shopper,
30, Monmouth Street,
Bath BA1 2BW.

WELCOME

This month we've changed the look of our *Amiga Answers* section somewhat with an attempt to gather up all the commonly encountered problems into a series of flow-charts. Such is the complexity of the Amiga and the systems designed to run with it, that we would probably need a whole issue to fully chart all the possible problems and solutions. So we've done the best we could given the space available and hope you find them specific enough to be useful. Next month it's back to the normal format so keep sending in those niggles and nightmares!

Otherwise, what else do we have for you this month? Well, two new series kick off for a start. First up is a set of practical articles on chaos and fractal theory – not too heavily mathematical of course, but informative enough for you to experiment yourself and have some idea what's going on. Not too dissimilar is the new series on computer life which stems from our earlier features on artificial intelligence and neural networks. Again, the pieces are practically based; leading you to colonising a portion of your Amiga's memory with self-reproducing life-forms!

Next month we have three more new series starting too – one on multitasking, one on C and one on ARexx – so stick around.

But back to this month and the two main stories. A price-cut for the A600 – no real surprise there, I suppose – and Commodore announcing a 68020-based Amiga for less than a £1000. There'll be those who say CBM should've gone for a 030 or 040 but I'm not one of them.

An O20 Amiga is fine. To borrow Atari's slogan it offers 'power without the price'. And isn't that what we're all after? Enjoy the ish!

Andy Stoner

Editor

PUBLIC DOMAIN WORLD

POWER TEXT

There are thousands of Amiga programs which are available for little more than the price of a disk. And many more which allow you to try the software free before you buy. Each month in *Public Domain World* we examine the best of these programs and explain how to get hold of them.

This month we focus on a new PD word processor, a desktop harpsichord, a fractal landscape generator and a great set of CLI utilities.

Public Domain World or

This is almost the free world

as we call it this month, start on page 128

AMIGA ANSWERS

32-PAGE SPECIAL EDITION

This month in *Amiga Answers* our panel of experts have set out to provide an overview of the common problems you're likely to encounter when using your Amiga. There's sections on DTP and word processing, printers, video, AmigaDOS, programming, memory, hard drives and a handy beginners' area. So if it's answers you're after turn to page 15 and start to go with the flow!

FOR A FULL LIST OF CONTENTS, TURN THE PAGE

Your guarantee of value

This magazine comes from Future Publishing, a company founded just seven years ago, but which now sells more computer magazines than any other publisher in Britain. We offer:

Better advice. Our titles are packed with tips, suggestions and explanatory features, written by the best in the business.

Stronger reviews. We have a cast-iron policy of editorial independence, and our reviews give clear buying recommendations.

Clearer design. You need solid information, and you need it fast. So our designers highlight key elements in the articles by using charts,

diagrams, summary boxes, annotated photographs and so on.

Greater relevance. At Future, editors operate under two golden rules:

- Understand your readers' needs.
- Satisfy them.

More reader interaction. We draw strongly on readers' contributions, resulting in the liveliest letters pages and the best reader tips. Buying one of our magazines is like joining a nationwide user group.

Better value for money. More pages, better quality: magazines you can trust.

future
PUBLISHING

The home of Britain's finest computer magazines:

- Amiga Shopper • Amiga Format
- Amiga Power • Commodore Format
- PCW Plus • PC Plus

- ST Format • Your Sinclair • Sega Power
- Amstrad Action • PC Answers • PC Format
- Mountain Biking UK • Needlecraft • Classic CD
- Cycling Plus • Photo Plus • Totalf
- Snap Play • Mege – & loads more next year

A VIDEO 24 + Animation

16.8 Million Colour Display Card for all Amigas.

Compatible Software

TVPaint version 1.7

This amazing software package allows painting in 24 bit in real time. It has already become the standard paint package for the professional. It needs 68030 or above and 8Mb of Ram. Short cut keys follow the DPaint style. Don't miss out on this wonderful package.

Only £ 249.00

Or buy AVideo 24 and TVPaint for Only

£ 569.00



.....and finally a worlds first.
All three Video planes on the same screen and on the same computer!

AVIDEO Specifications.

768 x 580 Broadcast Display

24 bit, 16.8 million colour

Double buffered 12 bit, (4096 colours) animation with up to 25 fps in non-latched and up to 12.5 fps in interlace.

Small easy to fit board, works with all Amigas except A1000.

Fully Genlockable with adaptor cable £39.00

Comes with 24 bit paint package, Multi-Media software and Animation utilities.

Allows PIP with Workbench Version 2.0

Amiga 600 Fast RAM Card

AMEM 600 is a Dynamic RAM expansion board for the Amiga 600 that plugs into the new PCMCIA external port on the side of the unit.

AMEM 600 is a credit card size unit (5x8cm) and only 5mm thick, which comes in two models: 2Mb and 4Mb.

AMEM 600 adds 2Mb or 4Mb blocks of rugged FAST RAM addressable directly by the 68000 chip. Applications in FAST RAM run up to 20% faster than those in CHIP RAM. The internal bus connector of the 600 only allows 1Mb of Chip Ram, therefore the external PCMCIA connector is the only viable memory expansion socket.

AMEM 600 is the only PCMCIA Dynamic Ram card available on the market. Static memory cards turn out to be 4 times more expensive than AMEM 600 for the same capacity.

AMEM 600 includes its own PCMCIA controller and does not steal any under cycles from the 68000 processor. It Auto-Configures at boot time so that the refresh system is loaded in FAST RAM leaving most of the internal Chip Ram free for Image Processing.

AMEM 600 - 2Mb £ 129.00 Dealers please contact

AMEM 600 - 4Mb £ 169.00 Telesales at:-

Also known as AMITEK.



ADD-2000 SCSI/RAM System for the Amiga 2000/1500



The same low cost, high performance system as the ADD-500, but in a Hard Card format. Ideally suited for the Video and Multi-Media environments where low cost and high performance is a priority.

Only £ 369.00

ADD-500

SCSI Hard Drive and Ram System.

Using low power CMOS technology, the ADD-500 gives the Amiga 500 owner the ideal low cost, high performance drive system. With 770Kb/sec transfer speed (test DiskSpeed) this system is also one of the fastest on the market.

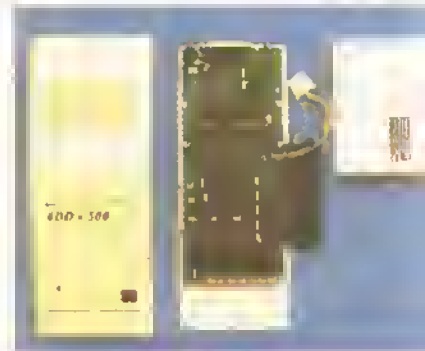
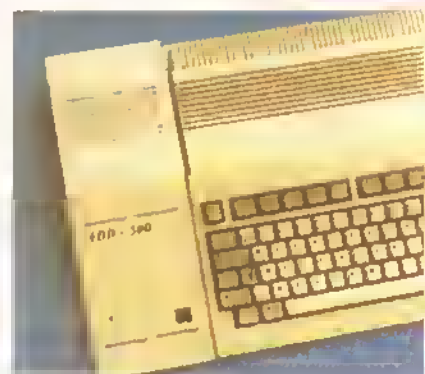
Ram can be expanded up to 4megs in 2mb increments using low cost ZIP chips.

The ADD-500 case is made from strong plastic, and made to complement the Amiga 500, with good ventilation and low heat generating components this is a very cool product.

The ADD-500 supports Auto-booting from Kickstart 1.3 upwards, Amiga FFS system partitions, and full AutoConfigure support. The ADD-500 supports MSDos and Macintosh partitions with the suitable emulators.

Full SCSI system support with up to 7 drive on the SCSI chain. With the 25 way SCSI connector on the rear will allow external connection of extra devices.

The ADD-500 does not cause any conflicts with any Amiga hardware, including Genlocks, Flicker Fixers and Super Hires Mode etc.



ARCHOS



Archos
99, Rue d'Aimblinville
91370 VERRIERES-LE-BUISSON

All ARCHOS products distributed exclusively in the UK by HiQ Ltd.

Mail Order and Dealer enquiries to 081-909 3885.

176 Kenton Lane, Harrow, Middlesex, HA3 8SU. All prices include VAT.

INSIDE THIS ISSUE

AMIGA SHOPPER

Issue 18 October 1992

Editor: Andy Storer

Deputy Editor: Cliff Ramshaw

Layout Sub-Editor: Diana Taylor

Production Editor: Allison Harper

Consultant Editors: Jeff Walker,

Mark Smiddy

Contributors: Jason Holbom, Paul

Overaa, Gary Whiteley, Phil Harris,

Ian Wrigley, Philip Gladwin, Conrad

Bessant, Toby Simpson, Wilf Rees

Guest Composer: Maurice Ravel

Ad Manager: Margaret Clarke

Senior Ad Sales Executive:

David Eckett

Production: Richard Gingell

Production Technicians:

Simon Windsor, Chris Stocker,

Jerome Clough

Circulation Director: Sue Hartley

Promotions Manager:

Michele Harris

Publisher: Stuart Anderton

Group Publishing Director:

Greg Ingham

ABC audited circulation:

January-June 1992:

48,799 copies/month

Printed by Redwood Press

News Trade Distribution -

UK: Future Publishing 0225 442244

Worldwide: MMC Ltd 0483 211678

This magazine is copyright © 1992

Future Publishing Ltd. No part of this

magazine may be reproduced without

written permission. We welcome

contributions for publication but regret

that we cannot return any submissions.

Any correspondence will be considered

for publication unless specifically stated

otherwise.

Editorial

30 Monmouth Street, Bath BA1 2BW

Tel: 0225 442244 : Fax: 0225 446019

Email: amshopper@clx.compulink

Advertising

Rayner House, 23 Higher Hillgate,

Stockport SK1 3ER

Tel: 061-474 7333; Fax: 061-476 3002

Subscriptions

The Old Barn, Somerton TA11 7PY

Tel: 0458 74011

So how about winning another year's free subscription then chaps? - this time it's all about East Enders (since some sod reckons I look like Dirty Den). Okay, answer this - what was the name of the wine-bar Den torched? You got it? Then just send the name to:

'Wilmott Brown deserved it, the dirty cad', Amiga Shopper, 30, Monmouth St, Bath, BA1 2BW. First out the bag wins 12 free issues. Oh, and last ish's winner was Jonathan McBrien - well done Jonathan, Roland's furry friends were indeed Kevin, Errol and Reggie!

News

7

Only three months after its launch the A600 is now £100 cheaper **PLUS** Commodore announces its mystery A2200!

Talking Shop

12

Is Atari's Falcon the new King? Are PCs better than Amigas? Join the raging debates with your host, the editor

AMIGA ANSWERS SPECIAL

...Or where to turn when it all goes wrong...

Your 32-page guide to identifying the source of any Amiga problem you may encounter begins on page 15. But to get straight into the flow of things here are the exact page details...

● Beginners	18
● Printers	22
● DTP	28
● Video	32
● AmigaDOS	38
● Programming	44
● Memory	48
● Hard drives	54

Education

60

How to hook-up Switchsoft's I/O unit to use your Amiga to control robot devices **PLUS** Getting ahead with AD!

DTP

62

The second and final part of our tutorial on typography - this month - what are bit-mapped and outline fonts?

MIDI Music

77

Paul Overaa gets down to serious MIDI coding and reviews two new pieces of QuasiMidi kit

AMOS

85

How to develop your techniques of 3D graphics programming **PLUS** all you need to know about screens

The World of Comms

93

Where to go in the fourth dimension to find a bulletin board **PLUS** How good is the NComm log file analyzer?

Controlling Chaos

95

How to use chaos theory to explore the amazing worlds of fractals on your Amiga

Get o Life

109

Fancy fathering a whole colony of digital creatures? Here's the theory and practical guide



Amigo Video

69

Why *Imagemaster* could be the most powerful picture processor released for the Amiga so far **PLUS** How to use lighting to enhance your 3D graphic creations

Business

115

Could *Maxiplan 4* be the professional spreadsheet you've been waiting for? Mark Smiddy adds up its pros and cons

Readers Ads

119

Two pages of hardware and software bargains

AmigaDOS

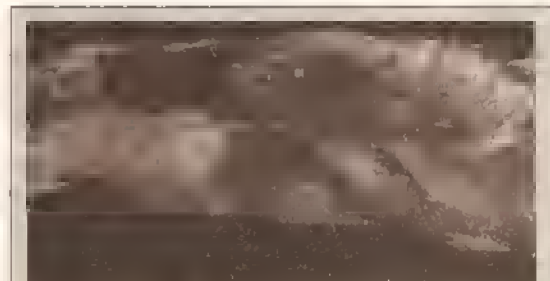
121

The final part of the DIY perpetual calendar

Listings

126

How to send control codes to your printer the easy way



Public Domain World

128

All the latest releases in the PD and shareware scene **PLUS:** Does *Power Text* beat its commercial rivals?

User Groups

140

Turn here to make contact with hundreds of fellow owners

Product Locator

142

Your at-a-glance guide to the best in PD and shareware

Win Home Accounts 2

146

Yes we have ten copies of this excellent financial package to give away. All you have to do is answer three questions

WeServe of Hampshire Established 7 years

NEW

Amiga Workstation /Expansion System

Monitor stand with shelf for drives etc. Strong metal construction made from 1.5mm plate. Fully adjustable. Amiga colour.

Special price **£27.50**

New Price

Citizen 224 24pin Colour*

Enhanced 24pin printer with easy to use control panel 2 year warranty. Price with cable & paper

Mono **£199**

Colour **£209**

Amiga printer driver £5.00

All Citizen printers have 2 year warranty

Swift 24E

Enhanced 24pin. Colour printer with cable & paper

Mono **£249**

Colour **£259**

Citizen Swift 9 with cable & paper

Mono **£169**

Colour **£179**

Citizen 120D+ with cable & paper **£109**

Panasonic KXP1123

Probably the best 24pin mono printer available. With cable & paper

£179

Panasonic/Epson

KXP1170 9pin 134
KXP1124i 24pin 227
KXP2180 9pin Colour 189
KXP2123 24pin Colour... 269
Epson LQ570 24pin 265
Epson EPL 4100 Laser... 680
Epson EPL-8100 Laser... 1115
Prices include VAT cable & paper

Naksha Scanner

200 to 400dpi. 105mm width with express-IT software **£99**

Naksha Mouse

for Atari ST & Amiga with house & mat **£21.50**

Squik Mouse

for Atari ST & Amiga **£13.90**

Midi Interface

4 channel Midi Interface for Amiga

£29

Dr. T's Midi Music Software (not suitable for A500+) **£9.95**

New Price

HP Deskjet Colour

300dpi colour inkjet printer. Colour laser quality at 1/10 of the cost. 3 year warranty. Price with cable & paper

£499

Deskjet 500

HP 300dpi Inkjet printer. Laser quality at dot matrix price. 3 year warranty. With cable & paper

£335

Printer Drivers

Citizen Colour 24pin 5.00
Canon BJ-10a 4.95
Deskjet 500 Colour 9.95

Printer Dust Covers

most types in stock from **£4.70** inc VAT

Canon BJ-10ex

360dpi Inkjet printer with cable & paper

£209

Star SJ-48

360dpi Inkjet printer with cable & paper **£205**

Star LC200

with cable & paper

£179

Star

LC200 Mono 9pin 129
LC200 Colour 9pin 179
LC2420 Mono 24pin 189
LC2420 Mono 24pin 209
LC2420 Colour 24pin .. 259
Prices include VAT cable & paper

Kickstart Upgrades

Commodore 2.04 full upgrade 79.00
Kickstart ROM only v2.04 41.50
Kickstart ROM only v1.3 29.00
Phoenix rom sharer 24.95
Keyb'd operated rom sharer 24.95
VXL30 25MHz Accelerator ..239.00
Fetter Angus custom chip37.50

True Mouse

for Atari ST & Amiga **£15.90**

Happy Mouse

for Atari ST & Amiga **£14.90**

Hard Disks

Commodore A590

20Mb Hard Disk for A500 **£249**

New Prices

GVP Series 2

for A500

52Mb Hard Disc **£333**
120Mb Hard Disc **£435**
240Mb Hard Disc **£699**
52Mb A530 Combo **£675**
120Mb A530 Combo **£819**

for A1500

52Mb Hard Disc **£265**
120Mb Hard Disc **£405**

GVP ram **£25** per 1Mb

A2286 Bridgeboard

CBM 286 Bridgeboard for A1500

£319

Commodore 1085SDI

14" Colour Monitor with cable dot pitch 0.51mm Standard Res.

£195

Commodore 1084SD

14" Colour Monitor with cable dot pitch 0.42mm. Medium Res.

£195 While stocks last

£9.00 discount on 1084 or 8833 with an Amiga

Philips CM8833 MK2

Colour monitor with cable Colour monitor with no cable

£199 **£189**

UK. 240V mains + F19 game

Accessories

Joystick/Mouse twin extension 4.70
3M Joystick/Mouse lead 3.75
A500 Printer cable 7.95
Modulator/Disk Extension 10.95
23way Plug or socket 2.95
A500 Dust Cover 4.70
Mouse Mat (thick soft type) .. 4.95
Mouse House 2.95
1M internal 3.5" drive 49.00
A500 replacement PSU 39.00
A590 replacement PSU 49.00
Rocgen Plus - Genlock + .. 129.00
Disc Wallet for 32 disks 7.95

Phone for our 60 page catalogue

EDUCATIONAL AND GOVERNMENT ORDERS WELCOME

All products have a 30 day money back & 12 month warranty.

Prices are subject to variation without prior notification.

Established 7 years. 3 minutes from M27 Junction 11:

Free parking. Open 9 to 5.30 Monday to Friday & 9 to 5 Saturday

Postage 94p or £3.53 Securicor £6.46 (£5.50 + VAT)

WeServe



Larger items delivered by Securicor



Amiga/Shopper Dept.
40-42 West Street
Portchester Hants
PO16 9UW
Tel: 0705 325354

Two new Amigas announced

A600 price drop — A570 released

This time it's official: Commodore has announced its latest Amiga.

The machine is an A3000 in a tower case, with a 68040 processor running at 25MHz. Although not the A4000 we had hoped for, it is nevertheless the most powerful Amiga so far, with a speed of around 32 million instructions per second.

Called the A3000T-040/200, the machine comes as standard with a 200Mb hard disk, 1Mb of Chip RAM and 4Mb of Fast RAM. It will be available from mid-September in America for a price of \$5,998. A UK price has yet to be set, but expect to see the model in this country towards the end of September.

Commodore is also expected to announce a brand-new mid-range Amiga before Christmas to replace the A2000. Commodore UK's managing director Kelly Sumner told Amiga Shopper that the new machine will be called either the A2200 or the A2400. The first of a new set of machines, it will be based on a 68020 processor and will sell for under £1,000.

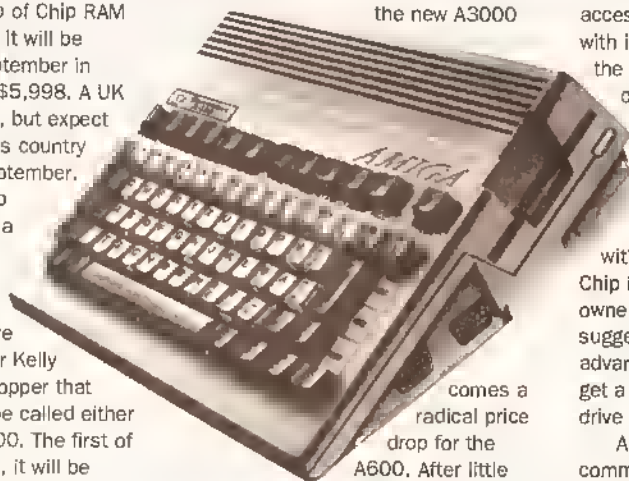
GRAPHIC IMPROVEMENT

The A2200 will be better than the 68020-based machine released in the States two years ago, said Sumner. It is expected to be the first to include the latest graphics chips (known as the 'AA' chip set) which should put Amiga graphics ahead once more.

Compatibility with its predecessors is a difficult area but,

unlike Atari with its ST-E, Sumner said that he hoped there would be no compatibility problems between the A2200 and the earlier machines. Amiga Shopper has learnt that Commodore has been talking with developers to ensure that they write software that will work with the new chip set.

Commodore has been far from idle this month. Along with the new A3000



comes a radical price drop for the A600. After little more than three

months since its launch, the machine's price has dropped from £399 to £299. The hard disk model remains at £499, allegedly because of the cost of the hard disks themselves. Currently A600s and A600 HDs are selling in the ratio of 60/40, with total sales of 60,000 between mid-April and the beginning of August. No doubt the price drop will alter this ratio considerably.

It seems that for once Commodore's manoeuvres have

met with approval from all quarters (aside from those who have just bought an A600 at the old price).

CD-ROM BOOST

Another piece of good news is that the A570 CD-ROM drive has finally been released for £349.99. As with the prototype (previewed in issue 12), the unit plugs into the A500 or A500 Plus's side slot and gives access to CDTV software. Bundled with it is the CDPD disc, containing the complete Fred Fish public domain collection up to floppy disk number 660, and the CDTV Welcome disc.

Unfortunately the A570 is only compatible with the A500 Plus or an A500 fitted with the fat Agnus and 1Mb of Chip RAM. As a consolation to owners of other Amigas Commodore suggests that they should take advantage of its trade-in scheme to get a CDTV with keyboard, floppy drive and mouse for £399.99.

An independent survey commissioned by Commodore estimated that 480,000 A570s will be sold within the next two years, and Commodore expects to sell around 33,000 by next spring.

The new drive should encourage developers to use the CD format. At the moment CDTV's user-base is just 18,000, but the A570 will help swell the market, so developers can expect to make a decent profit. And this increase in CD software should help to increase sales of CDTVs. It seems the CD bandwagon is about to start rolling with a vengeance.

Accelerators too hot to handle

A fire has swept through Progressive Peripherals & Software's factory in Denver.

Immediately after the event rumours were circulating that the fire occurred in suspicious circumstances, but it has since been ascertained that the fire began in a motor body repair shop sharing the same Industrial complex as Progressive's factory.

After several hours the fire department managed to bring the blaze under control, but by then the complex had been razed to the ground.

As a consequence Progressive Peripherals lost all of its stock and manufacturing capability. The company has made a swift recovery, and by the time you read this it should be shipping products at a normal rate, which means that you can expect a review of its remarkable 68040 accelerator for the A500 in the very near future.

The company's telephone number has changed to ☎ 0101 303 238 5555. Its products are to be sold in the UK by several companies, including Accelerators Unlimited ☎ 0253 795796.

Fred's fish on squished disk

The entire Fred Fish public domain library has been placed on a single compact disc by Almathera Systems.

Entitled CDPD, the disc includes every program appearing in the Fred Fish collection up to and including disk number 660. The cost of buying all of these programs separately would be in excess of £1000.

As well as containing many useful programs such as text editors, spreadsheets, a database and a sound tracker, the collection is an invaluable educational tool, illustrating many Amiga concepts with which users may be unfamiliar and including source code of use to programmers for many of the utilities supplied.

The disc costs £19.95, with regular updates being made available to registered users at 'inexpensive' prices. It is suitable for use with Commodore's CDTV; it can also be used with an Amiga and the A570 CD-ROM drive, which is now on sale (see lead story, left) and with which CDPD is to be given away free.

Almathera Systems ☎ 081 6836418.

What do the dealers think?

So how much of a smart move is the A600 price-cut? Here's what a selection of Commodore dealers reckon:

"I guess that it is now at the price it should have been when it was launched." Richard Austin, Evesham Micros

"We welcome this price cut, which keeps the Amiga competitive." Giles Harwood, Gordon Harwood Computers

"It's a good move from the point of view of the prospective customer." Gary Anderson, Merlin

"It's a good idea; it's certainly going to increase sales." Bryan Ramshaw, Marcliff Computers

"£299 is a big psychological mark. The price reduction had to be done to shift a lot of stock at Christmas." Jonathon Sherlaw, Diamond



Top: the A600 which has dropped from £399 to £299 within three months of its launch. Above: the A570, released at £349.99, gives access to CDTV software

Professional Draw update

American developer Gold Disk has released version 3 of structured drawing program **Professional Draw**.

Structured drawings differ from ordinary bit-mapped pictures in that they can be scaled without loss of resolution or the introduction of jagged edges.

Version three offers a number of enhancements over earlier versions. It utilises the concepts of Genies, enabling complex operations to be performed with a couple of mouse clicks, and Hot links, which enable the transparent exchange of information between *Professional Draw* and programs such as *Professional Page*.

Further enhancements include: radial and gradient fills, text editing directly on the page, Adobe Type 1 and Compugraphic font support, objects displayed in full colour or as wireframes, undo and redo functions, Pantone colour system, improved colour separation, improved autotrace to convert bitmaps to structured drawing format, free clip art, importation of 24-bit IFFs and auto-filing, enabling pages to be accurately split across several sheets of paper.

Professional Draw 3 costs £129.99 from HB Marketing ☎ 0753 686000. People with earlier versions will be able to upgrade, but a price for this has yet to be announced.

Gold Disk ☎ 0101 416 6024000.

Mighty mouse

Probably the most expensive mouse in the world is being sold by American firm Selectech.

The AirMouse operates via infrared, without the need of a flat surface. A user giving a presentation need only point it towards a projected screen and click a button to make a selection as with an ordinary mouse. The unit's infrared signals are picked up by a small base unit which feeds information to the computer via a serial link. Drivers are available for many computers, including the Amiga and CDTV.

The AirMouse costs \$595, so if you have a need for a mouse almost as expensive of your computer then give Selectech a ring on ☎ 0101 802 655 9600.

CORRECTION

In last month's issue we printed the wrong telephone number for Hands On MIDI Software. The correct number is 0705 221162

The future of entertainment

The Future Entertainment Show is set to be the biggest and best computer show for five years.

The show is to incorporate the World Of Commodore Show, that runaway success which so many of you visited last November. This time attendance is expected to be in excess of 100,000 people.

It will take place at both Earls Court 1 and 2, from November 5 to November 8. Opening times are 9.30am - 5pm (Thursday till Saturday), and 9.30 - 4pm (Sunday).

There will be a hell of a lot to do, buy and see. All of the big names in Amiga hardware and software will be there, including Commodore itself, Progressive Peripherals & Software, WTS, Power Computing, Citizen, Datel, Rombo, Futureworld, Ashcom, Cortex, Digita, Electronic Arts, Pandaal and Silica. There'll be the Christmas shopping mall where you'll be able to pick up some stunning bargains, some fairground rides to help you digest the readily available fast food; and the *Amiga Shopper* team will be there to talk about the magazine and give technical advice.

If games are more your bag, then you won't be disappointed. This year Amigas will be rubbing shoulders with



The World of Commodore show is all set to become part of the Future

Nintendos, Segas, PCs and STs. There'll be two video game arcades and loads of competition prizes. What's more, this could be your chance to get on TV. Future Publishing is organising the National Computer Games Championship in association with *Bad Influence!*, the new Yorkshire TV computer

programme. So get your face on the box and win up to £10,000!

No matter what your interest in computers, the Future Entertainment Show will be the place to be. Book your ticket now on the credit card hotline ☎ 051 356 5085. Be there or be the product of two orthogonal lines of equal length.

Cheaper T-shirt prints

Studio 101 has reduced the price of its T-shirt printing service.

The reductions come as a consequence of Studio 101, which has recently celebrated its first birthday, negotiating a better deal with its suppliers. The benefits of this deal have been passed on to its customers, enabling the company to offer cotton T-shirts at £10.99 in medium, large and extra large sizes. The T-shirts can be printed with user supplied artwork in IFF (including 24-bit) or HAM format.

In addition, the company can produce full colour A4 and A3 prints of users' images. The costs are as follows: A4 plain paper £2.99, A4 glossy paper £4.99, A4 overhead projector transparency £4.50, and



A better deal for T-shirt fanciers

A3 plain paper £5.50. Studio 101 ☎ 0827 280884.

Get a Star printer driver — free!

Free Amiga printer drivers are now available for the entire Star range of printers.

Continuing the enlightened trend set by other printer manufacturers, Star is now giving away a driver with every printer sold, saving the buyer

the hassle of trying to track one down via the public domain. Every Star registered dealer now has a set of the Star drivers. Anyone still experiencing difficulties in obtaining the correct driver can call Star's Technical Hotline ☎ 0494 471111.

Kind words from the makers of Wordworth

The Disc Company has released the latest version of *KindWords*.

KindWords 3 follows in the footsteps of its predecessors, but with one big difference: it has been written by UK firm Digita. Digita is responsible for the highly acclaimed *Wordworth* word processing package, and has included that program's Intuitive Human Interface Protocol in its version of *KindWords*. This should mean that *KindWords* is easier to use than previously, and also that new users of *KindWords* will find *Wordworth* a breeze to operate too.

Digita is hoping that many *KindWords* users will upgrade to *Wordworth*, and has implemented a trade-in scheme. Owners of *KindWords* can send the front page of their manual (plus £49.99) and receive a copy of *Wordworth* in return. *Wordworth* normally retails for £130.

Features of *KindWords 3* include: spelling checker and thesaurus, on-line help, flowing of text around pictures, automatic hyphenation and automatic page numbering. It is available from, among others, HB Marketing ☎ 0753 686000. Digita is on ☎ D395 270273. The Disc Company is on ☎ 01033 49109995.

Wordworth

a writer's dream

The graphical nature of Wordworth® makes producing documents faster and easier. The WYSIWYG display shows exactly how your printed document will look, different fonts, styles and sizes, headers and footers, graphics and so on.

Commands are grouped under a series of pull-down menus, accessible either by the mouse or keyboard. Frequently used commands have on-screen icons, including Help, should you need it.

Experience the look and feel of the new and exciting WB2 (even if you use WB1.3). Each document is a separate multi-tasking window, which means you could for example, print one document while editing another.

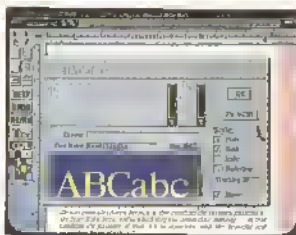
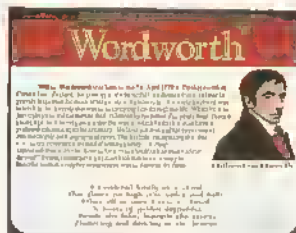
Digita's® innovative Human Interface Protocol™ is incorporated setting a new standard in speed, style and elegance. "It HIP™ system is intuitive and a pleasure to use." – thank you Amiga Shopper, it's nice to be appreciated.

Graphics have always been the Amiga's strong point. Now it's better than ever. Pictures from Deluxe Paint can be placed in a document, and then sized, scaled and dragged (text automatically reformats around the image).

Wordworth's enhanced fonts will give you the very best printed quality. You can also print special symbols, such as boxes, arrows and so on. Better still, you can mix graphics, Wordworth's enhanced fonts, Amiga fonts, Colorfonts and your printer's own internal fonts, all on the same page. There's even a driver for Postscript printers.

You needn't worry about your existing information – Wordworth will let you open documents from most word processors, including Kindwords, Protext and Wordperfect (you can also mailmerge with Superbase).

When Amiga Format said "a new word processor that will give the rest of the world a run for its money" they weren't joking.



ON DEMONSTRATION AT

**Future
Entertainment
Show**

v1.1

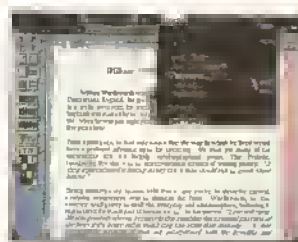
Wordworth is written in the UK by Digita. Which means you'll be using an English Collins spelling checker and thesaurus, and you'll know where to come for professional support.

The only way to really appreciate Wordworth is to use it. Phone 0395 270273 for more information or, write to Digita, FREEPOST, Exmouth EX8 2YZ.

Wordworth costs £129.99, which includes VAT, postage and packing; and when purchased from Digita, comes with a 7 day money-back guarantee.

If you already own a word processor, for a limited period only, you can trade-up for just £89.99 by returning your original disks to Digita with your order.

Summing up, Amiga Shopper said: "Pounds-per-feature no other Amiga word processor comes close. Wordworth is what every owner of Kindwords would wish they had." Dreams become reality with Wordworth.



Machine support
Written specifically for the Amiga
Fully supports WB V1.3 and V2.00
All medium or high resolution modes
(mono and colour)
Requires 1MB of memory

DIGITA®
INTERNATIONAL
software that's right

Wordworth is available from John Merwees, Virgin, W H Smith and all good computer retailers or to the trade through Columbus, Gem, HB Marketing, IBD, Lazer, Leisuresoft, Precision and SDI.

Digita International Ltd Black Horse House Exmouth EX8 1JL ENGLAND Tel 0395 270273 Fax 0395 208893

– A member of the Digita group –
Digita, the Digita logo, Wordworth and the Wordworth logo are registered trademarks, and HIP, Human Interface Protocol and software that's right are trademarks of Digita Holdings Ltd
All other trademarks and their owners are acknowledged. Sold subject to standard conditions of sale E & OE

The many faces of type

Amiga desktop publishers will be pleased to learn that FontShop has released a large collection of scalable fonts.

The company has compiled 350 Adobe Type 1 fonts for use with PageStream and Professional Page version 3. They are available in seven volumes of 50 fonts each, at a cost of £10 per volume. Instructions are provided, along with font support utilities and pictorial previews.

The company has also released three volumes of Compugraphic fonts costing £12 each, again with 50 fonts per volume. These fonts are suitable for use with PageSetter 2, Workbench 2.0x and Professional Page 2 or greater.

With the fonts already available from George Thompson Services and EM Compugraphics, FontShop's additions mean that Amiga desktop publishing has never been better.

FontShop ☎ 0526 398403.

Amigas to be installed in nuclear power stations

Eight Amiga CDTV's are to be installed in commercial nuclear power stations throughout England and Wales.

The machines which, some claim, have the most reliable operating system in existence, are to take their places inside fully functioning atomic plants as part of a plan to reassure the public.

Nicolas Mullane, Publicity Services Officer of Nuclear Electric, stated: "We decided to take CDTV for its reliability and cost."

The machines will be stationed in visitor centres and in viewing

galleries that overlook the pile caps of the reactors.

Surprisingly, they will be taking no part in the control of the reactors themselves, but will rather be acting as multimedia terminals divulging information about the theory and practice of nuclear energy to curious visitors.

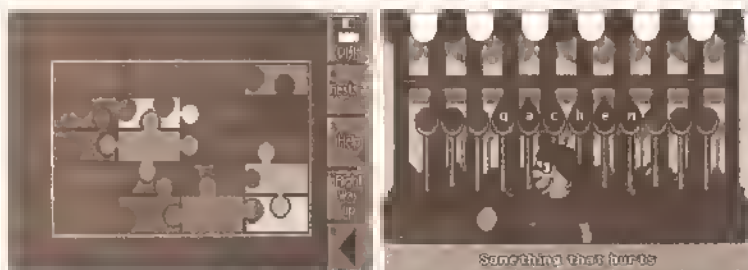
The software used was developed in 12 months by Distance Learning Systems, as part of a system which is to replace the traditional slides and projectors which Nuclear Electric's guides use at the moment and which are "prone

to break down or become jammed". This, of course, in no way reflects the quality of the components used in the reactors themselves.

Initially the new machines are to be placed in three nuclear plants: Wylfa in Anglesey, Trawsfynydd in North Wales, and Heysham in Lancashire. They are to be presented to the remaining nine power stations in the future.

The twelve sites between them received 155,000 visitors last year. This year the figures is expected to be 250,000, so CDTV should be getting plenty of exposure.

How to make learning much more fun



Paint And Create and Spelling Fair promise to put some laughs into learning

Europress is to release two new packages aimed at children's education.

The first, *Spelling Fair*, is aimed at seven to thirteen year olds. Using the idea of a fairground to bring across the fun aspect of spelling, it is made up of six modules, each with three difficulty levels, to teach children about plurals, similes, suffixes, prefixes and homophones.

In *Test Your Strength* the child uses a hammer to bash a gong and learn about unusual plural formations. A *Mechanical Grabber* section is used to illustrate the concepts of suffixes and prefixes, while homophones are dealt with by the *Haunted House* program. Also included are *Word Juggle* - making up words from a 3,000 word dictionary - and *Circus Words* where you complete crosswords.

Spelling Fair will sell for £25.99.

The second release from Europress is *Paint And Create*, a package designed to encourage creativity in children aged five and over.

The successful techniques of the company's earlier *Fun School* releases are employed to make learning fun with the inclusion of games and bright, bold colour displays.

Access to *Paint And Create's* various sections is gained via an animated menu system with the appearance of a scrolling landscape. A drawing program forms the main section of the package. Also included are a jigsaw section, a monster making section and a music program complete with teddy musicians.

Paint And Create will sell for £25.99, and should be available by the time you read this.

Europress ☎ 0625 859333.

Music magazine emerges

The musical amongst you will be fascinated to learn of the imminent launch of *Future Music*, the music technology magazine.

Coming from Future Publishing, the same stable that produces our own illustrious tome, the magazine will deal with all aspects of modern technology in the music world: computers (including the Amiga), software, synths and so on. The title will be edited by Bob Wade who, as many of you no doubt remember, was the first editor of *Amiga Shopper*.

The first issue of *Future Music* goes on sale 15 October for £1.95.

From Germany with chips

A German-based distributor is offering Amiga chips to dealers at attractively low prices.

The price of Amiga products in Germany have long been the envy of Amiga users. Now Grenville Trading International is to sell parts to UK dealers, we may soon see an equalisation of prices.

GTI supplies a number of Amiga chips, RAM expansions and assorted peripherals. As a guide: a 2Mb Agnus chip sells for £23.62, but such prices don't include VAT or postage, and are only for computer dealers.

GTI ☎ 01049 617185936.

A300 PRICE DROP

Commodore has announced heavy price cuts for the A3000 range.

The A3000-25/50 (with 2Mb of RAM and a 50Mb hard disk) has gone down from £2,999 to £1,299. The A3000-25/100 (with a 100Mb hard drive) goes from £3,299 to £1,499, while the A3000T-25/100 (with 5Mb of RAM) has been reduced to only £2,044 and the A3000T-25/200 (with a 200Mb hard drive) will now set you back a mere £2,540.

DATES FOR YOUR DIARY... DATES FOR YOUR DIARY... DATES FOR YOUR DIARY...

September 5: All Formats Computer Fair, National Motorcycle Museum, Solihull, ☎ 0225 868100.

September 12: All Formats Computer Fair, Sandown Racecourse, Esher, ☎ 0225 868100.

September 19: All Formats Computer Fair, Donington Racecourse, East Midlands, ☎ 0225 868100.

October 3: All Formats Computer Fair, Northumbria Centre, Washington, ☎ 0225 868100.

October 4: All Formats Computer Fair, University Sports Centre, Leeds, ☎ 0225 868100.

October 10: All Formats Computer Fair, City Hall, Glasgow, ☎ 0225 868100.

October 11: All Formats Computer Fair, Assembly Rooms, Edinburgh, ☎ 0225 868100.

October 17: All Formats Computer Fair, Novotel, Hammersmith, ☎ 0225 868100.

October 18: All Formats Computer Fair, Brunel Centre, Bristol, ☎ 0225 868100.

October 24: All Formats Computer Fair, Haydock Park Racecourse, ☎ 0225 868100.

November 5-8: The Future Entertainment Show, Earls Court 1 and 2, London, ☎ 051 356 5085.

EXPAND YOUR AMIGA



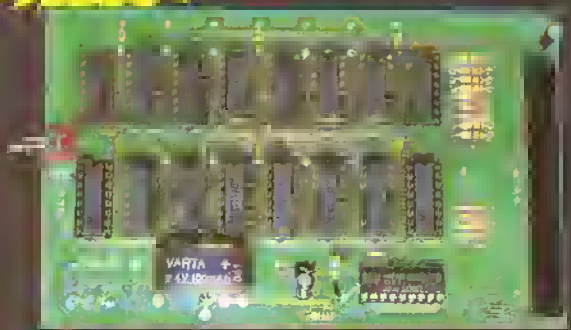
SEASONAL SALE

QUALITY PRODUCTS

at affordable prices

W.T.S. ELECTRONICS LTD

STOP PRESS:
KICKSTART 2.04 KIT
COMPLETE INCLUDING
FULL MANUALS ONLY £76
IN STOCK NOW



A500 PRO-RAM BOARD 1/2 MEG UPGRADE

- Latest design incorporates chipmem option at no extra cost
- Increases computer memory from 1/2 Megabyte to 1 Megabyte
- Allows all 1 Megabyte software to run. Now Commodore A500 standard
- Direct replacement for Commodore A501, 16 Chip Technology for complete compatibility.



British Made

£16.00 without clock **£19.00** with clock

UPGRADE TO AMIGA 500 PLUS

☆ Upgrade the standard Amiga 500 to ECS chipset A500 plus capability ☆

- ★ **KICKSTART 2.04** £38 £49 • Upgrades your existing Kickstart to that of the new A500 plus
- ★ **HIGH-RES DENISE** £33 £39 • Upgrades your graphic chip capability to that of the A500 Plus inc. anti-flicker
- ★ **8372 FATTER AGNUS** £38 £49 • Enables you to access 1Mb of chip memory with standard modification
- ★ **8375 2MB FATTER AGNUS** £65 • Enables you to access a full 2Mb of chip memory when fitted in adaptor board
- ★ **NEW 8375 2MB PRO AGNUS BOARD**
Provides 2Mb of chip memory when fitted to A500/A200/CDTV includes Agnus & memory £139
- ★ **2.04/1.3 KICKSTART SWITCHBOARD** £18 £24 • Overcomes software compatibility problems at the flick of a switch
- ★ **KICKSTART 1.3** £28 £36 • Allows existing A500 Plus owners to run old software when used in conjunction with switchboard
- ★ **A500 PLUS 1MB UPGRADE** £39 • Upgrades A500 Plus memory to 2Mb chip memory.
- ★ **GVP 52MB A500 HARD DRIVE** £359!
- ★ **GVP 52MB A500 HARD DRIVE + 2MB** £399!

SUPRA MODEMS

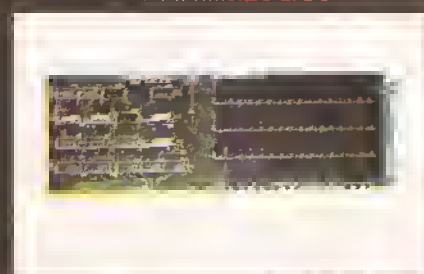


- 100% Hayes compatible
- Tone Pulse auto dial/answer
- RS232 Interface
- Internal diagnostics
- Programmable number storage

Supra 2400£84.00
Supra 2400 +£129.00

500RX 2Mb - 8Mb MEMORY EXPANSION

500RX 2Mb£148.00 500RX 8Mb 299.00
500RX 4Mb£204.00



A2000 MEMORY UPGRADES

0Mb ...£109.00
2Mb ...£149.00
4Mb ...£189.00
8Mb ...£269.00



3.5" EXTERNAL DISK DRIVE

- High quality
- High specification
- Anti click
- Long moulded cable

£48.00

A500 Internal replacement drive£44.00
Kickstart 2.04 Kit includes full manuals + disks£79.00
GVP 52Mb Hard Drive A2000£279.00



A500 HIGH CURRENT POWER SUPPLY

- Allow addition of many peripherals without damage to computer or power supply
- Switch mode design

£44.00



British Made

☆ All prices include P&P & VAT ☆ Please add £5.00 if you require 24 hour courier to your door or parcel post will be used ☆ 12 month warranty ☆

W.T.S. ELECTRONICS LTD, Chaul End Lane, Luton, Beds.

Tel: 0582 491949

Talking SHOP

Welcome to the Amiga world's liveliest letters pages! – the place where you get the chance to speak your mind. So join your host, the editor, Andy Storer for some more no-holds barred bantering. And remember, all you have to do to be included is send your missive to: 'Talking Shop', Amiga Shopper, 30, Monmouth St, Both BA1 2BW. So get to it!...

FALCONS OVERHEAD

I'm just writing to fill you in on some of the rumours which are circulating. Did you know that Atari is releasing its Falcon next month and it will be over here at Christmas. The rumoured specs are: full ST compatibility, 32-bit architecture, DSP 56001 processor, 16-bit 8 channel sound, 262,000 colour palette with 32,000 on screen, cost £400.

The rumoured Amiga 2200 specs are: 32-bit architecture, 68020 14.3MHz, a socket for the 68881 FPU, 1Mb Fast RAM and 1Mb Chip RAM, expandable to 2Mb Chip and 8Mb Fast RAM, de-Interlacer, one high density floppy (1.76Mb) and a 52Mb hard drive or two HD floppies; graphics specs vary from rumour to rumour – from 65,535 colour palette with 256 on screen to HAM-E spec, 24-bit palette with 262,000 colours on screen (we hope). Cost £?

There will be a new flagship range, the Amiga 5Station. The first, the Amiga 4100, will come with 25MHz 68040, 4Mb Fast RAM, 2Mb Chip RAM, up to 32Mb RAM, de-Interlacer, 5C51-2, 105Mb hard drive, high density floppy, dual 8-bit audio up to 44KHz, 16-bit audio up to 22KHz through one channel.

The Amiga 4200 specs are the same as the 4100's except for: 8Mb Fast RAM and 2Mb Chip, 210Mb hard drive, hi-res co-processor based video card with 1280 x 1024 resolution and 8-bit colour from a 24-bit palette,

expandable to full 24-bit.

The Amiga 4300 specs are the same as the 4200's except for: a Tower case, 330Mb hard disk, five 32-bit expansion slots, up to four 3.5" HD floppies and two 5.25" floppies fitted internally.

What worries me is that the Atari Falcon spec appears to be better than that of the Amiga A2200, especially in the sound department. I will be sickened owning a machine which comes second best to a machine built by the Amiga's old rival. We're used to the best so make sure it stays the best. Get the message Commodore.

Superb magazine. Give us more news. Long live the A500.

A Campbell
Pontefract

The Falcon may well be all set to swoop before Christmas but as far as I'm concerned it's already too little too late for Atari. Who's going to develop for it these days when all the main software houses pulled out of the ST market well over a year ago? I shouldn't worry – just leave the Falcon to all the dreamers. Meanwhile thanks for the machine specs – they tally pretty much with what we've heard.

DOUBLE BLUFFED

Congratulations! You were taken in! Your item 'Hot New Amigas' on page 12 of *Amiga Shopper* (September 1992) was based on a USENET wind-up. The original posting ended with the words "It

was just a dream, guys". Somewhere along the line, these words got cut and the rumour spread. Admittedly, it all sounds fairly plausible with references to new chip sets and Kickstart releases, but it is mere speculation.

I think you should check your sources a bit more carefully before publishing!

Or Andrew CR Martin
Ashted

We stated categorically that we could not verify the story in the first paragraph – what more can we do? – print 'don't believe any of the following', or headline it with 'Two new completely fictitious Amigas announced...'? I agree it did sound plausible, that's why we ran it with the qualifier.

BARGAIN HARD DRIVES

In *Amiga Shopper* last month, you could get a 2Mb A500 Plus with A590 20Mb hard drive for £600, yet a 2Mb A600 with 20M hard-drive could be bought for only £490.

Basically, if you want a decent system with enough memory and hard drive capacity to support a single major application, such as word processing, you'd be better to save over £100 by going for the A600. In other words, you're getting a 20Mb hard drive for only £140 – the cheapest I've ever seen; and an official model at that!

Further, your magazine seems to have overlooked the fact that the majority of users don't need to upgrade their machine beyond recognition with 24-bit colour, 5Mb memory, massive hard-drives etc, etc.

OK, these would be nice; but most people only use a couple of programs intensively – for word-processing for example – and so a 20Mb hard drive is perfectly adequate. You may lose a numeric keypad by going for the A600, and the A600 is certainly less expandable, but it's true to say most people won't miss these features.

In return, you get such a cheap hard-drive (I'd like to see a review of the drive) and full support now and in the future from Commodore. As far as I'm concerned, I'd go for the A600HD model every time.

Andrew Dunbar
Leicester

I agree, the A600HD does seem a good deal – especially when you consider it's probably more expandable than first thought. And once the hardware for the PCMCIA slot starts to appear, the new £299 price for the straight 600 will seem even better value.

PC PLODS

I feel I must write to you regarding the Amiga/PC debate that seems

to occupy some of your readers' minds. As I understand it, they believe the Amiga is underspecified compared with the 'cheap' PCs which can be bought for around £1,000 to £1,200. Well, they may be interested to read about some of my experiences with PCs.

I bought a 33MHz 486 PC with a Super VGA graphics card and a SoundBlaster sound board. Even with all this equipment my PC does not rate much higher than my unexpanded Amiga 1500. Whilst the main processor is undeniably very fast, the Super VGA graphics card is largely useless as I have not seen a piece of software that uses it. It is definitely inferior to the Amiga's Fat

"I am aware of no PC under £5000 which supports hardware sprites, BOBs or scrolling"

Agnus, so bit mapped graphics manipulation can end up as a painfully slow experience. In addition, I am aware of no PCs under £5,000 which support hardware sprites, BOBs or scrolling in any form.

However, the Amiga is not perfect. It really is screaming out for a fast processor and a big hard drive, if anything more than arcade games are to run efficiently.

In my opinion, if you have £1,000 to spend on a PC you would be well advised not to. Buy an accelerator board and hard drive for your Amiga or, better still, wait for the new 'Super Amigas' that Commodore is developing – they should definitely put an end to any ideas of the PC's superiority for years to come.

Robert N Oavis
Fareham

Depends on what you want to use a PC for though, doesn't it Robert?

You don't buy PCs for their graphics or sound capabilities do you? No, you buy a PC for what it excels at – and that's the cost-effective number-crunching of an unrivalled universe of productivity software on a machine that's infinitely upgradable.

AMIGA ANSWERS

Any thoughts on what I should do? I wish to update my Amiga 500 V1.3. Looked at the A600. Waste of time. A3000 far too expensive. The A2000/A1500, just not sure. Do I wait or do I buy? I've seen a A1500 for £499 but do you get 2Mb of

I CAN LAUGH ABOUT IT NOW...

I refer to an answer that you gave to a reader in the September issue of your magazine and wish to give advice, from experience, that might save your reader some money.

The query was printed on page 37 and was regarding a problem with his MicroLine printer not printing the bottom part of the letters. I had this problem when I first used my word processor, *Wordworth*, and printer, the Canon BJ10-ex. I was very disappointed and thought that my printer head was broken - however, it was only when Digita, the publishers of *Wordworth*, sent me the official newsletter that I solved my problem - I had been using sizes of fonts that required larger line spacing. After setting the line spacing to Auto, all my troubles disappeared.

Keep up the good work and continue producing an easy to read, informative magazine.

Andrew Harrold
Aberdeen

Thanks Andrew - a fiver's on its way to you... as there could be to anyone who sends in a lesson learnt from experience. Just mail it to:
'I Can Laugh About It Now, Amiga Shopper', 30, Monmouth St, Bath BA1 2BW.

Chip RAM available or is it 1Mb? I want the full 2Mb ChipRAM and 8Mb Fast RAM.

Several writers have hinted at a new Amiga machine in the pipeline. I've had my Amiga since 1989. I like it, I also have a KCS PC Board fitted, which fits the bill too.

If money allows and I stay in full time employment, I'll also get a cheapish 80486 PC computer.

But as for all the thousands of software titles available, what I have seen is bloody expensive. What a joke. And the Apple Macintosh as well - another bleeding expensive machine with expensive software.

What's the lads' and lasses' set-up at *Shopper* and how can they afford it?

Dave Magill
Cheltenham

I don't know what to suggest as I don't know how much dosh you have. Meanwhile, maybe you should wait for the A2200. As for us lads and lasses here - well we afford the set-up at *Shopper* quite easily - Future buys all the machines and software for us! We have four Macs - Diana has a II, Alison a IIsi, me a LC and poor old Cliff a Classic - though he also has an 8Mb Amiga A1500.

There's also an A500 and A500 Plus kicking around somewhere. Diana has a Mac SE 4/40 which she wants to sell for about £900, if you're interested, and Cliff has a Vauxhall Cavalier he wants to sell for around £1500. Alison doesn't personally own a computer but her brother has an Archimedes - though she does have some old clothes she wants to get rid of. And I've got a PC which I don't want to sell though I'm after cheap 1Mb 70ns RAM SIMMs and a soft-top for an old BMW if you've got any. And Cliff's just said he'll sell his body... but I better not print that.

PC QUESTIONS

My firm has just bought £3400 of PC equipment and software for me to use at work. This consists of a 386/25MHz, Star LC15 printer, Mouse, VGA monitor, 40Mb removable HDD and MSDOS 5, Windows 3.1, Cardbox plus 4, Supercalc 5 and Wordperfect 5.1 software. This is all times two with four hard drives.

You wanna know summat? I think it is the most illogical and user-unfriendly computer system I have ever had the misfortune to use. I have never had so much trouble getting a word processor to print a simple document. Give me my *Excellence 3.0* word processor and my Amiga any time. Anyone who sells their Amiga A500 and buys a PC instead (see last month's letters) must be about 10p short of £1.

Andi Bradley
Lincoln

Good job somebody else bought the kit on your behalf then, wasn't it? Again, all I have to say is you buy a computer for what you want to use it for. An Amiga with *Excellence* and a printer is fine for most people.

PC-CUTION COMPLEX

I am writing to you about several things which are puzzling me. Firstly - prices. Recently I worked part time for a place which sells and repairs PCs. When I showed them prices for Amiga hard drives, and floppy disk drives they were horrified. It seems that we Amiga owners are being ripped off.

For example I quoted the price for a 52Mb drive as being around £360. They showed me adverts for a 52Mb Quantum drive for £150 (the trade price), so at least £120 is being charged for a SCSI controller.

Now I accept that with bulk orders the prices will tumble, and that the Amiga controllers often contain memory expansions, but I could get a SCSI controller for the PC for £10!!

Even allowing for all the differences between the Amiga and PC, surely this is far too great a gap in price to be easily explained

away? What is more, for an internal 3.5 inch drive I was quoted £25 by a reputable PC dealer (again trade prices), against around £50 for an Amiga drive.

This time there can be no excuse since these two drives were identical, same manufacturer even. Call me suspicious if you like but isn't someone somewhere making a large profit at our expense?

Edward Moyse
London

There's two things you have to bear in mind here - one, don't get confused over trade prices and retail prices - there's always going to be a vast difference - and two, remember the difference in size of the two

"Anyone who sells their Amiga and buys a PC must be 10p short of a £1"

market places. There are millions more PCs out there than there are Amigas and hundreds more dealers selling add-ons. Therefore it's only logical there's fiercer competition and bigger price differentials. So I should draw you own conclusions when considering purchases.

CD-I WINS EASILY

Reading the letters page in *Amiga Shopper* September's Issue, I am writing to set the record straight with regards to the letter by Graham J Dix. As an electronics/hardware engineer with considerable experience with Amigas and a proud owner of an Amiga for four years, I consider the machine to be the best home micro.

I do feel that Mr Dix's comments were out of context. As an owner of a Philips CD-I unit since July 1992 I consider Mr Dix's letter was more of a reaction to Diamond's advert in August's Issue of *Shopper* - the advert in question being in bad taste.

Diamond were the only company in the UK which had full page adverts selling CD-TV; then they switch their allegiance to CD-I by taking the mickey out of those who bought it!

There are distinct differences between the two systems with CDTV being essentially an Amiga with a CD-ROM drive built-in - there is no disputing that fact.

Mr Dix's comments such as 'the worst piece of CD-TV is better than the best piece of CD-I software' were completely unfounded. Almost everyone who has seen such CD-I titles as

Treasures of the Smithsonian, *Time-Life Photography*, *Palm Springs Golf* and *Tell Me Why*, will tell you they haven't seen anything like it before and that includes senior computer analysts, programmers and teachers, etc...

The overall quality of the sound and graphics in CD-I titles is truly astonishing with Philips supporting its release with 35 titles at the same time as the launch of the machine in the UK. The machine itself is state-of-the-art in home multimedia. That's what it's sold as and that's what it does!

The point I am making is that there are clear differences between the machines and the technology used in them. Why is Mr Dix making comparisons such as *Simcity*? It has four tracks of music - well, this isn't exactly state-of-the-art! and if Mr Dix was a real Amiga user he would be writing his letter, playing *Simcity* and listening to a *Protracker/MED* module!

My advice is don't listen to me or Mr Dix - go and get a demonstration at a Philips dealer! I rest my case.

Chang Sum
Sheffield

To be fair, the titles you refer to are the cream of the crop - that's not denying they aren't state-of-the-art - it's just that there's CD-I dross out there too. I've seen every CD-I title on release and ready for launch and I have to admit they are largely more impressive than CDTV titles.

But why should this be? Dosh! That's what. Besides the CD-I consortium (that's Philips, Sony and Matsushita) owning copyright on loads of films, books and records, they've also pumped money into custom CD-I studios - there's a couple of dozen in the UK alone. Commodore has three things it can counter with though - one, its superior graphics and audio chips, two, the substantially lower development costs of CDTV titles and three, the tried and tested familiarity with the Amiga O/S of software houses.

At the end of the day though, it's software that counts and I'll repeat what I said last issue - for an Amiga owner there's only one choice - and that's the A570. Meanwhile, if you've got the money, buy a CD-I player as well.

RICH BOYS RULE?

I am dismayed at your magazine's 'rich boy' attitude. As a regular reader (indeed a subscriber since issue one) I feel that I have to comment on the increasing number of reviews of products which many 'normal' Amiga users cannot afford.

Your reviews of such expensive products, though they are well written and interesting, are of little

use to the vast majority of your readers. Most of us get by with a few inexpensive peripherals such as a printer or an extra floppy drive and a megabyte of RAM. If I bought all your "essential buys" I would be in debt for the rest of my life.

Furthermore, all you seem to do in *Amiga Answers* is advertise manufacturers of expensive add-ons rather than try to answer the questions. You also seem to concentrate on those who have the most money.

For example, someone wrote to *Amiga Answers* asking why their genlock would not superimpose graphics on to their videos. The outlay for the entire set-up came to around a thousand pounds yet X did not know that the genlock had to be connected to the Amiga. Yes, tell me that X was a beginner etc, but it won't wash. The fact is that

"If I bought all your essential buys I would be in debt for the rest of my life"

beginners shouldn't begin with such a set-up. I mean, people don't learn to drive in Porsches, do they? Furthermore, (though I can't prove this as I don't have the genlock) such information is present in the manuals. This just goes to prove that some people have more money than sense.

My personal view is that if people have such great amounts of money they can go and get professional systems analysts to sort out their problems and leave the problem pages to us wiser, but poorer, mortals.

You also pick on those who have acquired old printers, etc, and who would like to use them without spending a fortune. Most users do not have a bottomless pit of money for what is, after all, mainly an absorbing hobby.

I hope you will take note and change your ways before your excellent magazine befalls the same fate that has afflicted others. You need to cut the reviews and start telling people how to get the most out of what they have. The two hundred tips feature in the August issue was a good start. Keep it up.

David Lambert
Glasgow

Thanks, David. The last thing we want to do is adopt a "rich boys" attitude, but genlocks, for instance, are pretty expensive items and are used for specialised purposes –

they're therefore not used by the majority of Amiga owners. The fact that they are used by some, or are going to be used by some, does need addressing though.

It's my experience that people always want to look at improving their set-up as well as maximising what they already have. So we have to cater for both these needs. Sorry if you think we've got the balance wrong – it's something we'll look into.

VIRAL ATTACKS

Thankfully I have only had one scrape with a virus and that prompted me to investigate PD and shareware antidotes. However, having played around with *VirusX*, *ZeroVirus*, *Master Virus Killer*, *Bootchampion* and *BootX*, I am not so confident that I would know what to do if I found another.

I know that not all unrecognisable bootblocks are necessarily viruses and it is possible with these programs to read the bootblocks to see if there are any tell-tale messages. In addition, it is also possible to compare the blocks with known viruses in the supplied libraries.

I think an article on this subject would appeal to many of *Amiga Shopper's* readers, especially those who do not understand the significance of vectors such as *WarmCapture*, *CoolCapture*, *ColdCapture*, *KickMemPtr*, *KickTagPtr*, *Dolo* and *Sendlo*, and why and how they should change if a virus has infected the Amiga.

What is a link virus?, the difference between the whole bootblock and bootblock code, the offset and the value of uninstalling or zeroing the checksum? These are currently some of life's great imponderables!

Thank you for a great read and a constant source of info. I've been with you since issue one and do not intend to change.

Peter Langley
Preston

Viruses, viruses. Yep, good idea for an article and I can't think why we haven't done one to date. The only virus I ever came across was one which made my mouse movements go in the opposite direction – and a right pile of fun that was.

DIY ELECTRONICS

"Make your very own handy hardware add-ons with the help of our special projects features". That was back in the sneak preview issue, remember?

In Issue 1 we had an article on an anti-click board, which was a very useful start. Reading the article, one would be mistaken for believing that we could look forward to making sound samplers, virus

protectors, MIDI interfaces, etc, instead we've had nothing. Why?

I'm not suggesting that you're expected to design and develop projects, you made that quite clear in the anti-click article. However, it strikes me that you should be as comprehensive as possible when it comes to being "the only monthly magazine totally dedicated to the serious side of the Amiga".

Surely you could run an article on what appears to be an ideal product to test, which is the interface/modules kit currently available from Switchsoft.

It doesn't take too much imagination to see the possibility for publishing readers' articles based on the use of such a product. Or does it?

Anthony Croxford
Merseyside

OK, OK, OK. I like it. Let's hereby kick it off then shall we?

Right, any readers out there who've hooked up their Amigas to any self-assembled hardware, then why not write and tell us how you did it? We'll pay £70 for each one we print.

But here's what you should do. Send a photo or two of the set-up along with a 1000 word description of what you bought, how much it cost, how you fitted it, how long it took and what it does (preferably either on disk or typed).

Then stick it all in a bag and post it to: Amiga Projects, Amiga Shopper, 30, Monmouth St, Bath BA1 2BW

**"DIY projects?
We'll pay £70 for
each one we print"**

STAY THERE FOREVER

Congratulations on getting the latest issue of *Amiga Shopper* on sale in Hong Kong two weeks earlier than ever before. Even at a price of HK\$50 (£3.50) it's always been worth waiting for. The reduced wait cheered me up after mourning the death of the 500! Thanks!

PS Thanks for Chris Patten!

Pete Alex
Kowloon

Glad to hear we're reaching such far and wide places, Pete. We had that Chris Patten in Bath for a while but decided to upgrade. Keep him for as long as you want with our blessing.

SUGGESTIONS

At this precise moment in time, I think that your mag is the best

SPOT THE DIFFERENCE



Andy Storer, former *East Enders* star (left) and Dirty Den, current *Amiga Shopper* editor (right). "Are they by any chance related?" asks Simon Quanttrill

Have you noticed the page 3 fella looks remarkably like Dirty Den?

Simon Quanttrill
Suffolk

Page 3 fella, me? – Cor Blimey guv!

thing ever to hit the Amiga scene and the shelves of WH Smiths.

However, I have a few suggestions to make your mag even better...

Why don't you include a list of bulletin boards. I mean, there's bound to be hundreds of sysops out there seeking a mention, and I personally wouldn't mind shelling out an extra few pence for this service.

Also, there appears to be a lack of PD game reviews. I know that you have a "no games" policy, but I have been brought up with the fact that PD includes everything from Hex-editors to demos, and when you say that you review PD, that's what I want to see.

I'm not saying that you should review commercial games though, because some of them aren't worth the disks they're bunged on, but PD is PD. Thanks for listening.

Nell Boothman
Carlisle

I think we could take on the idea of bulletin boards you mention – any Sysops out there wanting publicity just send your details to 'Baud beyond belief', Amiga Shopper, 30, Monmouth St, Bath BA1 2BW and we'll print 'em free. Make sure you include the baud rates, the charges (if any), the on-line times and your special interest areas. Remember, we won't even consider anything that smacks of piracy.

But as for PD games – the answer is no. We're just not interested in wasting the space.

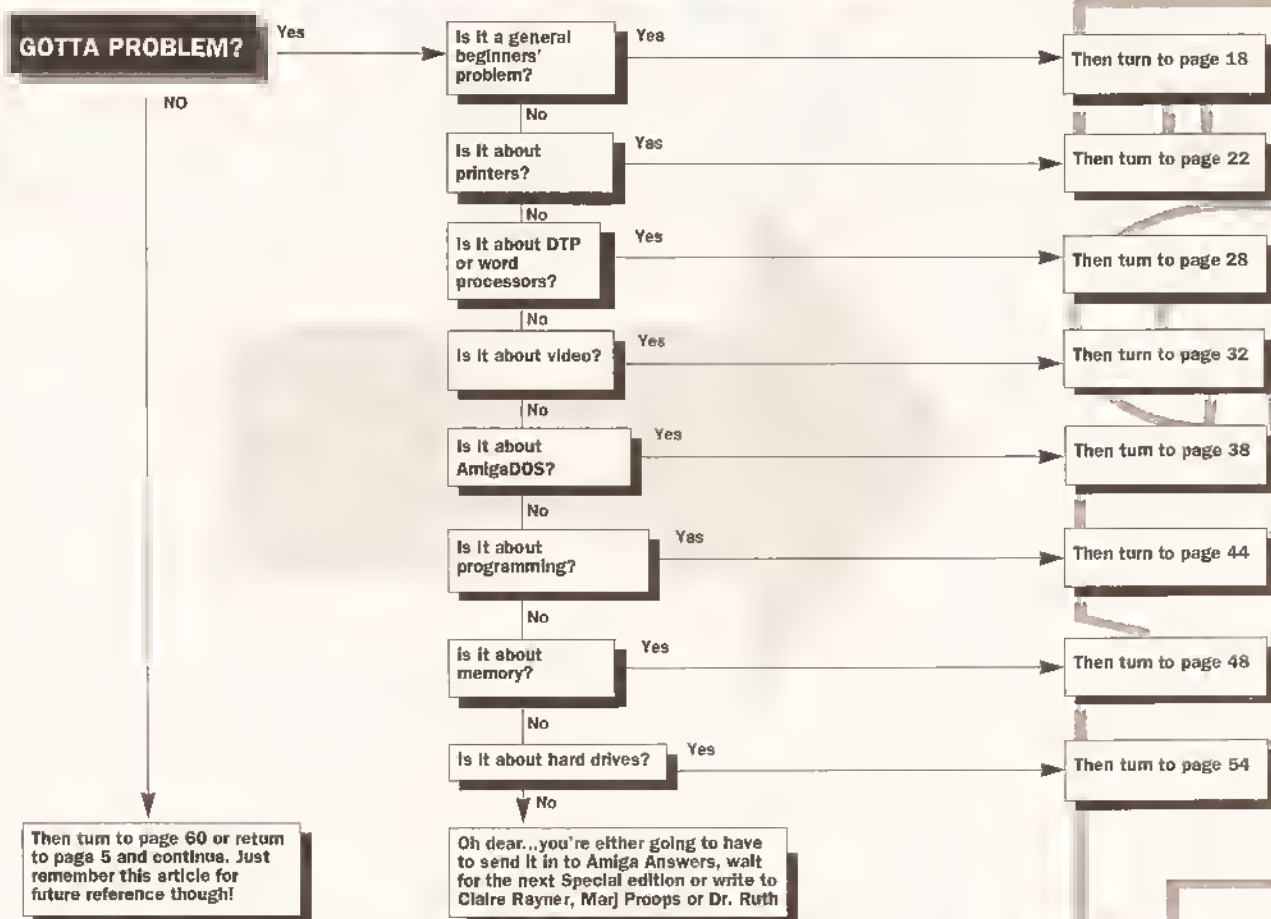
**YOU GOT A VIEW?
WE'LL SEND IT TO! :**

Andy Storer, Talking Shop,
Amiga Shopper, 30 Monmouth
St, Bath BA1 2BW.

Go on! – be a part of the
International Amiga World!

OUR EXPERTS TACKLE YOUR REAL-LIFE PROBLEMS

AMIGA ANSWERS

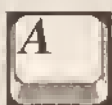


YOUR PROBLEM-BUSTING GUIDE STARTS HERE!

SO WHAT DO ALL THOSE ICONS MEAN?



Beginners: this icon will appear next to any questions which are 'basic' in content.



General: this icon is used for any general Amiga-related queries.



Caution: be sure that you fully understand the answer before trying it out.



Danger: the answer to this question could well invalidate your warranty – or you!



Hardware: this icon is used to denote questions relating to general hardware.



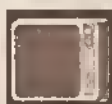
Buying advice: we use this icon if the question asks us for buying advice.



Printers: this icon denotes a query about printers, printer drivers and so on.



Technical: any queries about programming will have this icon next to them.



Video: this icon relates to any query about using your Amiga with video hardware.



Music: this icon is for questions about MIDI, sampling, synthesizers and so on.



Programs: any program-specific queries have this icon next to them.



Comms: if your question relates to comms, this is the icon that we'll use.

Cliff Pearson

All prices incl. VAT

TEL:
0446
421316



7-8 SULLY VIEW
Ty Verlon Industrial Estate
Barry CF6 3BE

FAX:
0446
420404

ROCLITE 3.5 SLIMLINE DRIVE



Amiga Format says
"beautifully made
slimline drive, quick
and quiet with all
the extras - 85%
+ 3.5" 880KB
External Drive
+ Access time: 3ms
track to track
+ 0.9" high
+ Enable/disable
switch
+ 23 pin pass
through socket
+ Allows connection
to a 3rd drive

£52.50

FLOPPY DISKS

BRANDED DISKS

5.25"	3M DATA LIFE, TDK, VERBATIM DATAFILE PLUS, MITSUBISHI ATHANA	3.5"		
CHOOSE ANY OF THESE BRANDS				
Boxes of 10	1-2	3-9	10+	25+
5.25" DSDD 48tpt	\$5.60	\$5.30	\$5.20	\$4.70
5.25" DSDD 96tpt	\$8.90	\$8.40	\$8.10	\$7.80
5.25" DSDD 1.6Mb	\$8.90	\$8.40	\$8.10	\$7.80
3.5" DSDD 135tpt 1Mb	\$7.10	\$6.80	\$6.60	\$6.15
3.5" DSDD 2Mb	\$12.00	\$11.60	\$11.00	\$10.35
3" Maxell CF2	\$20.50	\$19.50	\$18.50	\$16.70

BULK DISKETTES

5.25"

We only source bulk diskettes from major manufacturers, therefore we only supply quality performance products.

3.5"

100% ERROR FREE (Prices Include VAT)

Price per disk	20	50	100	200	500	1000
5.25" DSDD 48tpt	0.28	0.27	0.24	0.23	0.22	0.20
5.25" DSDD 96tpt	0.30	0.29	0.27	0.26	0.25	0.25
5.25" DSDD 1.6Mb	0.40	0.39	0.36	0.35	0.34	0.33
3.5" DSDD 1Mb	0.45	0.43	0.41	0.39	0.38	0.34
3.5" DSDD 2Mb	0.68	0.65	0.63	0.61	0.59	0.58

PRINTER PAPER

Size	Weight	Quantity	Price (incl VAT)
11" x 9.5" M'perl	60gm	2000	£17.95
11" x 9.5" M'perf	70gm	2000	£18.95
Exact A4 M'perf	70gm	2000	£23.50
11" x 14.5"	60gm	2000	£22.50
11" x 14.5"	70gm	2000	£24.50
A4 Square Cul	80gm	500	£6.50
A4 Copier paper	80gm	500	£3.25

FAX PAPER

Width	Length	Core	Box	Price box (incl VAT)
216mm	30m	13mm	6	£24.00
210mm	30m	13mm	6	£33.75
210mm	50m	25mm	6	£24.00
210mm	30m	13mm	6	£18.00
210mm	30m	25mm	6	£18.00
210mm	100m	25mm	6	£44.00
216mm	100m	25mm	6	£44.50

Please ask if your fax is not listed

ACCESSORIES

Keyboard Drawer	£14.99
14" Tilt and Swivel monitor stand	£9.99
Multifunction printer stand	£15.99
Universal printer stand	£3.99
Copyholder - adjustable	£14.50
Copyholder - gripclip	£3.99
14" Anti-glare screen filter	£9.99
Dust Covers - all types	from £3.50
ACCD PC workstation	£99.95
3.5" cleaning kit	£1.50
Mouse mat	£2.45
Mouse pocket	£1.95

MICE & SCANNERS

ROTEC AMIGA MOUSE rm3000	
Superbly styled, ergonomic design	
smooth precise operation	
200dpi/500mm/sec	£13.95
OPTICAL MEGA MOUSE	
6' lead, 300 dpi	£29.95
NAKSHA SCANNER for Amiga 500	£115.00
DAATASCAN PROFESSIONAL	
A625 SCANNER	
2/3/400 dpi	£170.00
FANCY MOUSE (AMIGA)	£26.50
CORDLESS MOUSE	£57.95

JOYSTICKS

Maverick GS128F	£14.95
Flightgrip	£8.95
Python 1	£9.95
Quickshot Turbo	£9.50
Speedking Autofire	£10.50
Cheetah Bug	£13.95
Apache 1	£6.99
Tac 50	£12.99
Block Cruiser	£9.95
Python 3 (Sega)	£11.50
Zipstick	£11.95
Fool Pedal	£22.50

AMIGA EXTERNAL HARD DRIVE



SPECIAL PURCHASE LOWER PRICES

+ External hard drive for Amiga 500
+ Built In Autoboosting
+ On board Ram option up to 8Mb
+ Beginner friendly on-line help
+ A super-fast, high capacity hard drive that leaves others in its wake

Rochard RH800C 52Mb SCSI OK **£329.00**
Rochard RH800C RAM upgrade per Mb **£42.60**

MONITORS

PHILIPS CM8833/11 STEREO 14" COLOUR MONITOR.

Covered by a 12 month warranty. Includes connecting cable, green screen switch UK specifications

£229.99

PRINTERS

	Pin	Sheetfeeder	Price incl VAT
Citizen 120D	9		£129.50
Swift 9	9		£187.00
Swift 9X	9		£104.50
Swift 24E (including colour kit)	24		£264.50
Swift 24X	24		£295.00
124D	24		£104.50
			£370.00
			£180.00
Newlett-Packard			
Thinkjet			£320.00
Quietjet			£420.00
Deskjet 500 colour (3 year warranty)			£559.00
Deskjet (3 year warranty)			£385.00
Pathtjet			£600.00
Commodore MPS1270			£129.99
Star LC20	9		£77.00
Star LC200	9 colour		£133.00
Star LC15	9		£199.95
Star LC24-200	24		£175.00
Star LC24-200	24		£240.00
Star LC24-200	24 colour		£230.00
Star LC24-200	24 colour		£269.95
Canon BJ100			£175.00
Canon BJ10E			£470.00
Canon BJ10E			£65.00
Brother 1309	9		£184.00
Brother HR-20			
Daisywheel			£154.95

BEST BUYS SAVE £ £ £'s

DEAL 1 AMIGA A600 SINGLE DRIVE
4 GAMES WORTH £120, 0.5Mb RAM
EXPANSION, COMMODORE MPS1270
INK JET PRINTER, PRINTER STARTER PACK

RETAIL VALUE ~~£695~~

OUR PRICE ONLY **£595**

DEAL 2 AS DEAL 1 BUT WITH NEW GOLDSTAR
AMIGA/TV MONITOR, Includes Scarf
Leads, Remote Control and 40
Channel TV

RETAIL VALUE ~~£895~~

OUR PRICE ONLY **£750**

DEAL 3 AMIGA CDTV GAMES PACK
includes - Amiga CDTV Player
SOFTWARE - Hutchinsons Encyclopaedia
Lemmings, Welcome disk.

RETAIL VALUE ~~£499.99~~

OUR PRICE ONLY **£399.99**

DELIVERY CHARGES:
ALL PRICES INCLUDE
VAT & CARRIAGE

NO HIDDEN EXTRAS

FAX
0446
420404

PHONE
0446
421316

CREDIT CARD ORDERS
0446 421316



Payment by:

VISA

Cheque, Postal Order, Visa or
Access. Please do not send cash

E&OE all prices and manufacturers specifications
are subject to change without notice.
Please call before ordering

BEGINNERS...

Just got your Amiga out of the box and already come unstuck? Wilf Rees answers the questions which newcomers frequently ask...

TROUBLE SHOOTING CHART FOR ABSOLUTE BEGINNERS

Unwrap computer from its packaging. You should have the following hardware: 1 Amiga, 1 power supply unit, 1 mouse, TV connector lead, 1 TV modulator (A500), 1 TV sound 'Y' connector (A500), 3 Disks: Workbench Fonts and Extras WB.2 H/disk software (A600HD)

Are all of these items here?

Yes

Assemble as directed in manual, making sure all leads, connectors etc are firmly pushed into their place

Amiga is set up

Turn it on via the power supply switch

Is your Amiga an A600HD?

No

Does picture of hand appear or anim of disk entering drive? (prompt)

Yes

Insert Workbench Disk in drive 0

Does prompt re-appear?

No

Wait for Workbench screen to appear

Insert extras disk in internal drive and double-click on its icon. Then double-click on 'tools' icon. Double click on 'say' icon

Type something in and press return

Do you hear any sound, ie speech?

No

Yes

Does it work now?

No

Check volume on TV or monitor. Check cabling from modulator ('Y' connector should join the audio out on the Amiga to the audio in of the modulator)

Check monitor leads or modulator

Does prompt appear?

Yes

Disk or disk drive is faulty

No

Machine is faulty

Take back to dealer

Machine or modulator is faulty

Hard disk is faulty

Does it boot up into Workbench?

No

Load hard disk installation software and format hard disk, then install Workbench

Yes

Does the hard disk boot up into Workbench? (No disk in drive)

No

NO PROBLEM

DOS BASICS



I am a newcomer in the Amiga area, never previously owning a computer. Manuals seem to baffle me. I'm struggling with Workbench but finally getting somewhere. The manual continually refers to AmigaDOS and occasionally, AmigaBasic. What is the difference between them? Can I use them to learn about the disk operating system? Please help.

Iain Woodlaw
Sunderland

AmigaDOS is the disk operating system of the Amiga. You can access this by loading Shell from Workbench. Shell creates an interface for commands that you enter. For instance, you can load a program in Shell just by typing in its name, eg:

`workbench:utilities/say`

This will load the "say" program which is in the utilities drawer of your Workbench disk.

You can also list the contents of a disk by typing...

`dir workbench:`

AmigaBasic, on the other hand is a pure programming language, for writing your own programs. It is however, quite a dated language and there are many newer languages that have superseded it in terms of speed and flexibility.

AMIGA QUERIES



I am hoping to sell my computer soon and get a new Amiga. I have got my eye on

the A1500. I have seen an advert from Hobbyte in your magazine which sells an A1500 and Philips CM8833 MkII Monitor for £695.

1) Does the A1500 have similar specifications to the AS00 Plus?
2) Can Action Replay have a virus? If so, how can you kill it? Mine is acting up a bit so I was wondering if it might be a virus.

Elliot Newsome
Rhyll
Clwyd

1) The A1500 is quite similar to the A2000 due to the fact that they both share the same motherboard. On this motherboard there is an ECS Agnus, allowing 1Mb total chip RAM (not the same Agnus as an A500 Plus.) The 2.04 Kickstart ROM is fitted, but only the normal Denise is fitted (no extra screen modes, such as super-high-res etc).

2) There is no way that Action Replay could have a virus as all the software

is contained in a ROM, so the virus could not write to that memory. It is possible, however, that a virus is being loaded into the RAM of your computer from disk, and clashing with the Action Replay ROM software. The answer to all of this is to check your disks for viruses!

PD FONTS ON HD?



I have bought various PD fonts and have been unable to save them to hard disk.

When I call up the Shell which is on 0h0: (my hard disk is partitioned into 5) and type `Copy fonts to dh0 fonts`, it states it cannot open disk in DF1:. Also, when I ask for `DIR DF1:` I get the same answer. I know that the PD disks are OK as they load satisfactorily into *DPaint*, which is also on dh0: I've tried `Copy df1/fonts to dh0/fonts` to no avail. I would appreciate your help.

RA Thorne
Henley
Oxon

Before I answer your question, is it really necessary to partition your hard disk into 5?

To copy the fonts from a disk in df1 (presuming that the directory of df1 looks something like this...

```
1      (dir)
fonts  (dir)
.info  fonts.info
readme.txt
```

The fonts would usually be contained in the fonts directory of that disk, so you'd type this into the Shell...

```
copy df1:fonts all to ↓
dh0:fonts
```

This command copies all the files and sub-directories that are in the drawer 'df1:fonts' to the drawer 'dh0:fonts'.

SPACE QUOTATIONS



How can I access a file or directory which comprises of two words or numbers

with a space between them? When I do this manually, by using the space bar, AmigaDOS only recognises and accepts the first word. There is nothing specified in the manuals to help me, so please can you?

Phil Taylor
Haverhill
Suffolk

To access a directory or file which has a name comprising of two or more words separated by blank spaces, you enclose the entire path in quotation marks, eg...

```
copy "df1:art/Mona" ↓
```

```
lisa.iff" to ↓
"df0:Lo res/Iff Portraits/"
```

The point to remember is that the device name (df1: dh0: etc.) has to be enclosed in the quotation marks along with the file or directory name.

ACCELERATOR BLUES



In the background of my Workbench disk I enjoy playing soundtracker

modules, using *Noiseplayer*. Ever since I bought an accelerator (Microbotics VXL-30-2S) I've noticed that the occasional drum beat or sound is missed out, leaving the song sounding rather odd. I've tried using other music players, such as *Chameleon* and *Intultracker* but the same effect occurs. Can you suggest a way of fixing this problem or any software that does not have this "accelerator unfriendly" bug?

G Earston
Leeds

You are right in saying that these programs are accelerator unfriendly. The programs you mentioned all receive their timing from sources such as screen frequency and cycles of the CPU clock. Because these sources may vary from screen to screen, ie 50hz PAL to 60hz NTSC and CPU speed 7.14Mhz to 25Mhz as in the case of the Microbotics VXL-30-2S, the timing of the module is not always as it was intended to be, due to the interleave between the Amiga bus and the accelerator bus, which is not divisible into the timing of the module. The only one which springs to mind is *Medplayer*. This uses the real-time clock as a source of timing and is therefore accelerator friendly. This utility comes with *MED*

or *Octamed* and is available from most PD libraries. The only snag is that you will have to convert the module to a *MED* file to play it.

PROTECT 'EM ALL!



I have a Workbench 1.3 Amiga 500 and I'm starting to use it for things other than

games. I had a go at "cracking the shell" and I am now fairly competent at using AmigaDOS, but I was wondering how you protect multiple files from deletion, because wildcards just do not work! I've tried "protect workbench1.3:c/#? -d" but this just leads to the message "protect failed" How can I protect many files at once?

Nelson
Hammersmith

There is a script file in the S: directory of your Workbench disk called *spat*. This script file enables you to use commands with wildcards which normally do not support them. The correct syntax for this command in your situation is...

```
execute s:spat protect ↓
workbench1.3:c/#? -d
```

Spat uses the *list* command, redirecting the output to a file in ram:, which is a list of all the filenames with text inserted to run *protect* for each filename which is covered by the wildcard. If you type this...

```
execute s:spat protect ↓
s:#?startup#? rwed
```

the script file in RAM would look something like this...

```
protect s:startup-sequence ↓
```

JARGON BUSTING • JARGON BUSTING • JARGON BUSTING

ROM - An area of memory which contains all the information of the computers operating system. ROM stands for Read Only Memory, as the computer cannot write information to this type of memory.

RAM - A different area of memory which is used to store information or to load programs into. RAM stands for Random Access Memory.

Megabyte - A thousand kilobytes (K), often abbreviated to Mb, popularly called meg.

Trapdoor slot - The slot underneath an Amiga A500 or A600 which enables further expansion, eg memory expansions, emulators etc.

Emulator - A program or piece of hardware which makes your computer act like another computer, eg an Amiga emulating a PC.


Printer Driver - A file that is usually found in the *DEVS:printers/* directory of your Workbench disk. This file controls the printer, converting the Amiga's raw output into a language that your printer will understand.

Startup-sequence - A file found in the S: directory of most bootable disks. This file is a sequence of commands or programs run during boot-up.

```
rwed
protect s:startupII rwed
protect s:shell-startup rwed
```

The script file is then executed by spat, and the relevant files will be protected.

NO ADDRESSING!

 How can I try and run AmigaDOS commands from ARexx? I've tried ADDRESS AMIGADOS

and ADDRESS DDS, but it always seems to tell me "host environment not found." What is the name of the environment that is to be addressed to execute AmigaDOS commands and how do you go about doing it?

Douglas Bealey
Lancs

The name for the environment to address is "COMMAND" and you address it as follows...


```
Address COMMAND
'c:copy' filename 'to' J
destination_dir
```

This previous extract, with the variable "filename" being "c:dir" and the variable "destination_dir" being "ram:" will send "copy c:dir to ram:" to AmigaDOS. This works by sending anything that is surrounded by quotes directly to the environment being addressed and anything that is not surrounded by quotes is a variable or expression that is to be sent. To go back to Rexx commands, simply type:

```
ADDRESS REXX
```

Then continue your Rexx script as normal. Happy addressing!

NO DIET FOR AGNUS!

 Who is Agnus? Why is she getting fatter and fatter? Are Paula and Denise sisters?

What's enhanced about the ECS?

Gary Ilmoor
Stoke-on-Trent

Increasing demand from the users of Amigas for greater hardware capability has lead Commodore to update its machine to cope with these needs. The Agnus chip was updated to enable the user to have more "chip" memory (memory used for storing samples, graphics etc). The newer Agnus chips were bigger, with more Chip memory available, hence the term Fatter Agnus. While the Agnus chip was being superseded by larger, more powerful chips, the other chips, Denise and Gary were updated. Denise is the screen handling chip. It deals with all the screen resolutions and graphic modes. This chip was updated to the

ECS version by the addition of some more screen modes: super high-res, Productivity and a load more. This was because the average user was expecting better resolutions than the standard ones that the earlier Denise chip offered. Paula deals with all the sound of the Amiga and the data received from the disk drives and input/output ports.

FULL OF EXTRAS!



I'm using Amiga Basic on my Amiga 500 and I am having difficulty saving files.

A box appears for me to type into, but the Amiga spurts up a requester saying "Volume Extras1.3 is full" I've tried putting blank formatted disks in the drive where the extras disk was, but the computer just says "please replace volume Extras1.3 in any drive" Is there any way in which I can get round this problem, without having to delete files from my extras disk?

R Winter
Rhyll

Yes, there is. When you type the name of the file you wish to save in the box, you have to state the path where you are saving it. The Path means where the file is to be found. An AmigaDOS disk is structured into drawers which are ordered into a hierarchy. A drawer on a disk may contain files or other programs, but it may also contain another drawer. For example, if the file "myprog" is in the drawer "basicfiles" which is on the disk "programs" From AmigaBasic, you would type the following to load the file "myprog"...

```
load J
'programs:basicfiles/myprog'
```

If you break this statement down, you will see that the disk is called "programs:" remember, when you type the disk name in, you have to put a colon at the end to tell the computer that you are referring to a disk and not just a drawer. Next, you will see that there is a slash sign "/" separating the "basicfiles" drawer from the "myprog" filename. A slash sign works by indicating to the computer that the next name you are giving is inside the drawer before the slash sign. This example of another path shows the structure method:

```
df0:drawer1/drawer2/ J
drawer3/filename
```

The example shows that 'filename' is in 'drawer3', 'drawer3' is in 'drawer2', 'drawer2' is in 'drawer1', 'drawer1' is on disk 'df0'.

So, for example, if you want to save your file on a disk which you have previously named 'programs'

and you want to save it in the 'basicfiles' drawer of that disk (that you have created also) then type the following into the Amiga Basic window:

```
Save "Programs: J
basicfiles/MyProgram"
```

SCART ART!



I use my Amiga 500 mainly for graphics, with DPaint IV. As my passion for drawing

has increased, I decided to go for a monitor, possibly the Philips 8833 MkII. I was later told by a friend, that I was better off getting a TV with a 'scart' socket on it. What benefits will a 'scart' socket give me and what do they do?

Ben Peatsfield
Essex

A scart socket on a TV is a socket that allows direct access to the tube of a TV for a computer. This bypasses all the tuning circuitry, thus giving a crisper image. Even though the quality is usually a lot better than a conventional TV, the image is not as crisp as what you would see on a monitor, like the Philips 8833 MkII. The main problem to look out for is that even though a scart socket is supposed to be a standard, (set by Philips) not every manufacturer sticks to this standard, often deviating in the wiring of the socket. In these cases, a lead would have to be made up, which would cost more than a standard scart lead. The bonus you do get by buying a monitor TV, is that when you get tired of zapping aliens, you can just flip over to a TV channel. You will of course need an aerial.

FORMAT?



I am new to Amigas and I don't know much about the way they work. One

manual stated that it needed a blank formatted disk to save to. What does it mean to format a disk? Why do you have to do this? How do you do this?

A Leihley

Formatting a disk is a process by which the disk is prepared to receive information. On a disk surface, there are loads of microscopic magnetic particles strewn about in a random manner. For a disk to receive information, these particles have to be in a uniform configuration. You format a disk by putting it into your disk drive, and waiting for an icon to appear which has the writing "df0:???" below it. Click on this icon with the left mouse button, hold down the right mouse button and move the mouse pointer up to the

tools menu and select "format disk" by holding the right mouse button over it and letting go. You will be asked for confirmation of this process, and all that you have to do is click, with the left mouse button on "OK." Of course the disk must be write enabled - this means closing the little black slider on the bottom left-hand corner of the disk. When the slider is open, ie you can see through the hole, then the disk is write-protected, which means it is not possible to write data to the disk. You should make sure you write-protect all of your disks with programs on, to ensure you do not accidentally over-write important information, and also to ensure the disk is not attacked by a possible virus.

DF... WHAT?



What on earth is df0, df1, etc? I keep on being expected to know what they are, but never really understand.

AB Glinner
Knutsford

Df0 is the name given to the disk drive number zero, or the Internal drive. It stands for Drive Floppy 0. The number can range from zero to four, as the maximum floppy disk drives that the Amiga supports is 4.

When you refer to the drive, df0 you always place a colon ":" at the end, in the format "df0:"

AMOS ANGST



After reading a few issues of your magazine, I am thinking of getting an

Amiga. In many of your magazines you refer to something called AMOS and AMOS 3D. I was impressed with the graphics screenshots that you showed, but I was confused. What actually are AMOS and AMDS 3D?

B Johnstone
Cheshire

AMOS is actually a programming language similar to Basic. It is aimed at a person with an intermediate level of competence with computers, although there is a beginner's version of AMOS called Easy AMOS which is a fun and quite versatile language for a beginner. Both versions of AMOS provide a powerful language for any user, giving access to all the Amiga's facilities, including sampled sounds, and beautiful graphics. It is a superb language for writing games and demos. My colleague Jason Holborn writes a regular AMOS column for Amiga Shopper, and has dealt with many of the features AMOS offers. Look him up this month, or, if you wish, you can buy back issues to have a

complete course in some of the tasks Jason has handled.

PINS 'N' NEEDLES



What is the difference between 9 and 24-pin printers? I'm thinking of getting a printer for word processing, when I purchase my Amiga 1500. Could you recommend a certain printer? (It has to be able to do colour, for the purpose of graphics printing.)

**Robert Wilkinson
Herts**

The difference between 9 and 24-pin printers is the number of pins that are fired at the ribbon, which in turn, hit the paper to produce a dot. 24-pin printers can print higher detail than 9-pin printers as the pins are smaller, hence smaller dots. 24-pin printers are far superior for text output, the letter styles are crisper and have finer detail, but for colour graphics, some prefer the output of 9-pin printers. The 24-pin printer which consistently comes out tops in reviews is the Citizen Swift 24e (£269). This printer has a wide selection of typefaces and the graphics output is very good. For cheaper 24-pin colour, you could try the Citizen 224 (£199). Have you looked at non-impact printing, such as the Canon Bubble-Jet and the Citizen project? (£359) ☎ Silica 081 309 1111.

WHAT ARE VIRUSES?



What are computer viruses? When I get one on my Amiga, will I have to call the GP if it gets one?

**B Shutton
Southport**

Computer viruses are small programs, written by illegal programmers, which spread from disk to disk, often causing havoc as they write themselves to another disk. These viruses are often designed to work without the operator noticing, spreading until something bad happens, ie information is lost. The Amiga is particularly susceptible to viruses, due to the fact that when a disk is inserted, the Amiga reads the disk, and the virus is transferred into memory, ready to write to another disk that is inserted.

There is light at the end of the tunnel! Many programmers have been writing programs to deal with these viruses. These programs are usually very effective in the fight against viral infections, some even have the facility to learn new viruses, effectively vaccinating your computer against them. The commonest source of viruses is pirate software.

You think obtaining an expensive game for the price of a disk is a bargain? It's not. Dozens of software houses go to the wall because their product is effectively stolen, and the fewer the number of firms producing software, the less diverse the range of titles available. The easy solution to avoid viruses is, firstly to use only bona fide software, and secondly keep your disks write protected.

PRINTER DRIVER?



I have recently bought an Amiga 500 Plus and a Citizen Swift 24 Printer. I use DPaint III to draw pictures and other diagrams. When I tried to print it out a problem occurred. The output was just a mess of silly characters (over 20 pages of it). I then went into Printer preferences and saw that the computer was set up for an "Epson X" Could you tell me why this is? I do know that the cabling and the printer are OK.

Anon

The problem is that you need to put the correct printer driver on the disk that you boot up from. The correct printer driver for your Swift 24 is called "EpsonQ" To install this printer driver, you will need to re-boot with your Workbench disk and go into Shell and type:

```
Copy extras2.0: ↵
devs/printers/epsonQ to ↵
DpaintIII:devs/printers/
```

Then follow what the requesters say, inserting the correct disks when you are asked. (If you've named your Workbench disk something other than Workbench 2.0 then you will have to change that section. The same applies to Extras 2.0.) Then, making sure that you have booted up from your DPaint disk, you will need to open printer preferences from the Workbench disk and select the correct printer driver (EpsonQ).

If you are booting up from your Workbench disk to use DPaint, then you will need to type the following into Shell, after booting up with your Workbench disk...

```
copy extra2.0/devs/ ↵
printers/epsonQ to ↵
workbench2.0:devs/printers/
```

You will then need to go into printer prefs and select the correct driver for your printer. Now DPaint should print out properly.

FAREWELL OLD ENGLAND



I bought an Amiga 1500 a few months ago, and have really just got into using it, mostly for writing reports for work.

My company is moving myself and my family to Bermuda, and while I relish the thought of sub tropical beaches and palm trees, will my Amiga still work OK, and will I be able to buy American peripherals to continue expanding my system?

**R Butcher
Aberdeen**

I'm delighted to tell you that the mains system in Bermuda will offer no problems for your Amiga 1500, apart from which, most of the internal cards and peripherals take their power from the Amiga's own internal power supply, so the nearby American market will be available to you. There may be possible setting up problems requiring the services of an expert to rectify this situation, so please do not feel at all hesitant in seeking my assistance, just send return flight tickets (one also for my wife) to *Amiga Shopper*, marked 'Personal Attention of Wilf Rees', and your problems will be sorted!

SOUND SENSE



I have recently upgraded my hi-fi system and have the amplifier and speakers from the old system going spare. I bought the Cartoon Classics pack, and was wondering if I could use my old hi-fi to improve the quality of sound output from the current system which uses a Commodore 1084S. Unfortunately the inputs on my amp are 5-pin DIN sockets. Are the two systems compatible?

**A Plover
Sheffield**

Judging by the fact that you mention it is an old hi-fi system, I expect that there is an option on it to select aux input. The 5-pin din socket would be the input through which the aux signal is sent. It is likely that the input is a line-in type of input. The Amiga's output is equivalent to a line-out on a tape recorder, so connecting your computer to the hi-fi will be possible. I cannot tell you the connections as they vary from hi-fi to hi-fi and you didn't tell me anything about yours, but I'm sure that you will be able to find them out by ringing the manufacturer.

ACE ANIMATIONS



I got an Amiga 500 Plus for my birthday, and am really enjoying learning how to use it. The package came with lots of games, which at first were fun, but I'm starting to get bored with them. What I would really like to learn, is how to do really clever animations, such as you see in *Space Ace*. What software do I need to do this? I am

12 years old, and I have a 1.5Mb expansion board as well as the standard 1Mb. and a second drive. Do I need a video camera to get the cartoon effects?

**Peter Walker
Swindon**

Firstly, I'll get something straight: you don't need a video camera to get the cartoon effects. What you do need is an animation/paint package like *DPaint IV* or Walt Disney's *Animation Studio*. Both packages employ the "onion skin" effect. This is an effect by which the previous few frames of an animation are shown, underneath the current frame. This facility is used by professionals, using clear acetate. You seem to have enough memory to do animations to start off with, but you may want more memory as you progress.

A600 SUPPORT?



I really need your opinion. I have been seriously considering the Amiga 600HD, but I'm unsure about whether I should consider a 386 PC instead. Is the A600 a dodo, and will there be continuing support for it? My main uses would be DTP, word processing and occasional games. Will the A600 be upgradeable?

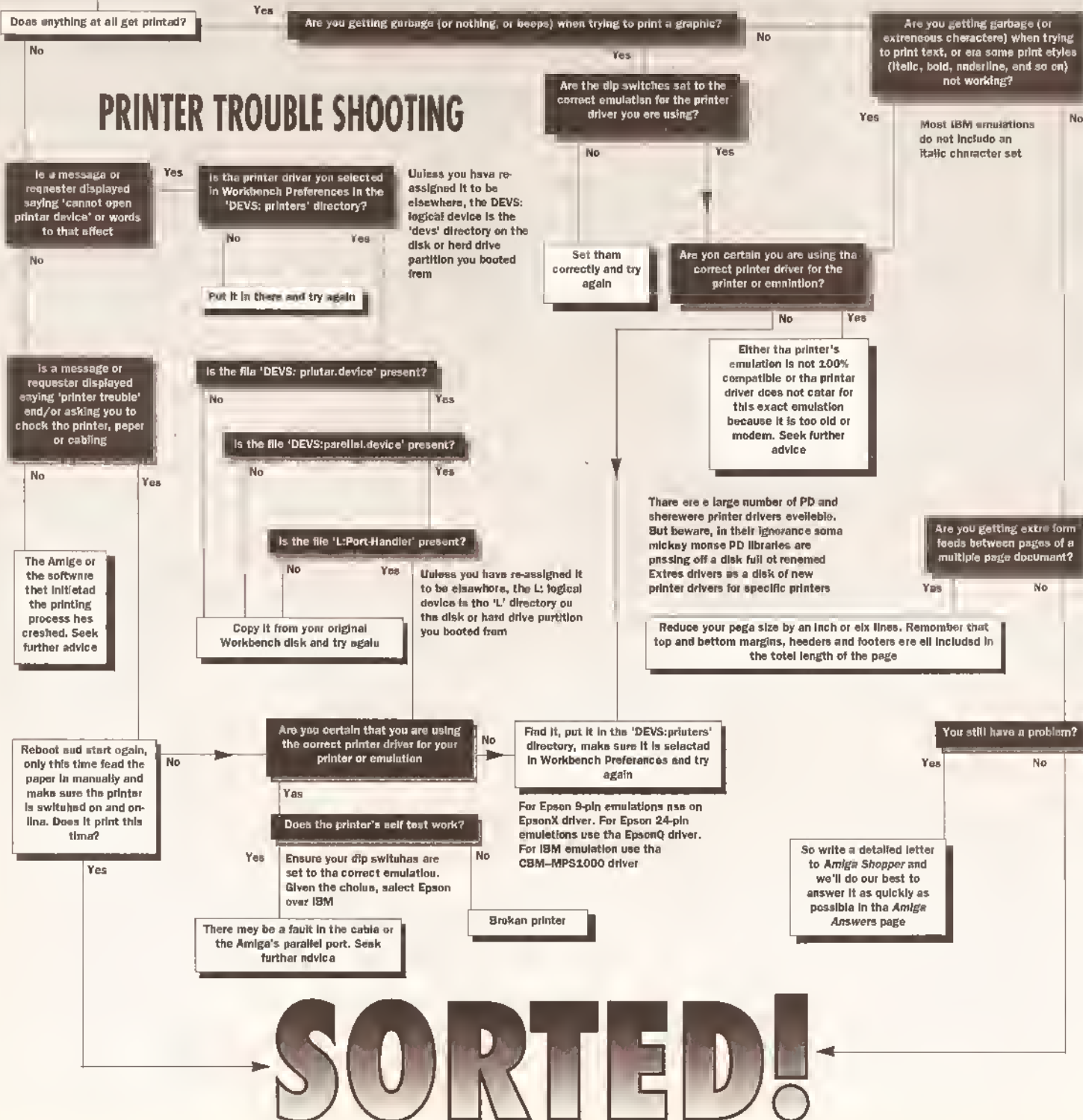
**R White
Kewick**

As you've probably read in previous issues, there are mixed feelings about the Amiga 600. Even though the A600HD is a good computer, it seemed to come at the wrong time. It should have been released about a year ago, with a version that included a faster processor being available now. In terms of speed, a 386 PC is faster than an Amiga 600, even the base model, a 386sx running at 16Mhz is at least three times faster than an Amiga 600. The ratio of performance against price is much higher with a PC. The drawback is that you will have to spend a great deal of money souping up a PC to make its sound compete with an Amiga. Also, with a PC, you will not get the range of PD software you would get on an Amiga. Support for the 600 from Commodore would be as good as it was for any of its models, but support from other companies would entirely depend on the sales of the A600. To stick my neck out, I would say that there is going to be the support for it. The Amiga 600 employs surface-mount technology, meaning that the chips inside are not upgradeable, except the Kickstart ROM which contains the operating system. Perhaps some manufacturer will produce an accelerator which plugs into the trapdoor slot. Who knows?

PRINTERS...

Problem with your printer? Whether it's to do with scanners, drivers preferences or even ribbons, Jeff Walker's got the answers

START HERE



PRINTING PUZZLE



I have a DataScan Professional hand scanner with data switch. My machine is an Amiga 500 converted to 1Mb Chip RAM. It has a GVP 52Mb hard drive fitted.

When I try to print from *Deluxe Paint II* or *PageSetter* the whole machine goes crazy, but only when using the EpsonX[CBM_MPS-1250] printer driver. I get some sort of output using the EpsonJX80 driver.

The problems happen only if I boot the hard disk, if I boot from floppy everything works fine. Below is a copy of my startup-sequence, in case that helps.

```
assign t: ram:
run >nil: fastmemfirst
assign Scribble!: J
Word/Platinum_Scribble!
assign DICT: J
Word/Platinum_Scribble!
assign Scribble!:
Word/Platinum_Scribble!
assign DICT: J
Word/Platinum_Scribble!
assign Scribble!: J
Word/Platinum_Scribble!
assign DICT: J
Word/Platinum_Scribble!
loadwb
run >nil: mymenu/mymenu
run >nil: v- J
checker/virus_checker - J
100 -t13
run >nil: blanker/blanker
system/setmap gb
ASSIGN FONTS: fonts:
endcli >nil:
```

RC Whinnerah
Letchworth, Herts

This is a difficult problem to track down, it has to be done by a process of elimination.

I'm glad you sent me your startup-sequence because there are a few things in there that need either removing or changing. First, you are assigning the logical devices Scribble! and DICT: three times, so leave the first two Assign statements in and remove the four that follow.

Next, in the second from last line you have assigned the logical device FONTS: to the logical device FONTS:. This would seem a fairly pointless thing to do. Change it to read...

```
Assign FONTS: SYS:fonts
```

The SYS: logical device is assigned to be the root directory of whatever disk you boot from.

Right, now that's sorted out, let's try to track down your printing problem. The best clue we have is that the problem goes away if you boot from floppy. This suggests that

one or more of the files required for printing might be different on the hard disk than on the floppy.

Assuming you want to use the EpsonX[CBM_MPS-1250] printer driver, here's a list of the files that need to be present, and where they need to be...

```
DH0:devs/printers/EpsonX[CBM_MP
S-1250]
DH0:devs/printer.device
DH0:devs/parallel.device
DH0:L/port-handler
```

To make sure the hard drive contains the same files, copy those four files from your boot floppy into the correct places on your hard drive, re-boot with the hard drive and try a print-out.

If it still plays up, remove from your startup-sequence the lines that run the mymenu, virus_checker and blanker programs, and try again; it's possible that one or more of these PD programs is interfering with *Deluxe Paint II*, *PageSetter*, or the printing process.

If that doesn't work. Switch everything off, remove the data switch, plug the parallel cable into the Amiga, switch on and try again.

If after all that it still plays up after booting from the hard drive but works OK when booting from floppy, it (obviously) must be something else.

You've only given me one more clue. On your question form you've written down the number 515,400 next to Total Memory Fitted, and 1,040,216 next to Chip Memory Available. How can you have more Chip memory available than total memory fitted?

If this is correct, there's something wrong. The 8372A Agnus and 1Mb Chip memory upgrade only works with the 4-chip 512K trap door expansions, if yours is one of the older 16-chip models (like the CBM A501) you will have all sorts of problems. It might be worth checking this out before you do anything else.

NL RIBBONS



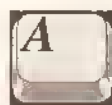
I have an old Star NL-10, still giving good service, but I am unable to obtain a replacement ribbon cartridge.

The ribbon I am using has frayed at one point and occasionally jams. I believe I need either the complete cartridge or a ribbon sub-cassette, but I can't find a supplier.

JH Wade
Old Harlow, Essex

Caspell Computer (0202 668208) is advertising Star NL-10 ribbons for sale at £4.95 each. Not sure if this is the 'cartridge' or 'sub-cassette' that you mention, so you'd better ask before buying.

HOW DO I KNOW?



In the near future I plan to print out black-and-white images created with a ray-tracing program, and I suppose an inkjet printer will do fine for this job. But how can I be sure that the printer I see in the shop will work properly with an Amiga?

There are quite a few printer drivers on my Extras disk, but since the time they were written dozens of new printers have arrived on the market. Is it possible to get these printers to work with the Amiga?

And what is 'printer memory'? I read an article about laser printers in an MS-DOS magazine, and they spoke about 2Mb of internal memory installed in the printer being the minimum requirement for the printing of graphics of some sophistication. Does this count for the Amiga too? If so, how much memory do I need for printing ray-traced graphics?

Igor "The Tulp" Wesdorp
Amsterdam, Holland

The way the Amiga works with printers, via independent printer drivers, is a wonderful invention. But it means that it will only work with printers for which there is a specific or compatible driver. And it also means that the quality and speed of the print-out depends on how well the printer driver has been written.

Luckily most new printers include emulations for older printers, and while this means that you might not be getting the best out of the printer, at least you can use it until such

time as there is software (or a printer driver) that supports it.

The safest emulation to check for is 24-pin or 48-pin "Epson LQ" emulation. The most popular emulations are LQ-850, LQ-1000, LQ-1050, LQ-1500 and LQ-2550, but if the printer can emulate Epson LQ-500 or above, then there are Amiga preferences printer drivers that will work with it. EpsonQ on the Extras disk will probably work, but it isn't really good enough; what you need is a driver called Star24Plus, which was written specifically for the Star LC24-200 printer, but will work with all Epson LQ emulations above LQ-500.

Star's Amiga printer drivers are available in the UK directly from Star Technical Support on 0494 471111, although they'll possibly not be too happy about wasting time with owners of non-Star printers. You can also get them from *Just Amiga Monthly* on 0895 274449.

IrseeSoft's *Turboprint Professional* will also drive these Epson LQ emulations and gives you the advantage of being able to alter the other patterns, the brightness and contrast levels of print-outs.

At this moment there are no satisfactory Amiga preferences printer drivers for Hewlett-Packard printers. Sure there are a couple on the Extras disk, but they are old, slow, and only work properly with the original DeskJet and LaserJet models. *Turboprint Professional* includes support for the DeskJet, DeskJet 500 and DeskJet 500C. If the printer you intend to buy emulates a DeskJet, then *TurboPrint Professional* will almost certainly drive it. It'll also drive LaserJet II

JARGON BUSTING • JARGON BUSTING • JARGON BUSTING

ASCII – American Standard Code for Information Interchange is the data storage method commonly used when we type text files; it enables data to be exchanged between different computers and to be sent to printers.

Compugraphic fonts – Rather than a simple bit-mapped image of each character, which grows more jagged with magnification, the characters in a Compugraphic font are each represented as a mathematical shape. Consequently, as the size of a character is varied whilst printing, no information is lost and the result always looks smooth.

Dip switch – A method employed by several devices, including hard drives and printers, to enable the user to make manual adjustments to the way the device behaves. Printers typically have dip switches to control line feeds, perforation skips and the kind of fonts they will use.

DEVS – A directory on the Workbench disk containing the 'device drivers' for various Amiga peripherals such as printers.

Dithering – The juxtaposition of varying densities of black and white (or colour) dots to create the illusion of a grey scale (or more colours).

Printer driver – A program which sits between any applications program producing output and the printer. It converts any codes describing text and graphics format into a form suitable for the specific printer.

emulations, but (currently) not LaserJet IIP, III or IIIP.

But... cue fanfare... Hewlett-Packard has at last realised that many Amiga users own Hewlett-Packard printers, and I think you'll see Amiga preferences printer drivers for the complete DeskJet and LaserJet ranges before very long, and maybe even the PaintJets. Don't expect them to be free, however.

Canon's bubble jet printers are well supported with Amiga printer drivers. The BJ-10e, BJ-10ex, BJ-20, BJ-130, BJ-130e, BJ-300, BJ-330 and BJC-800 all have Amiga printer drivers available from Canon Technical Support (081-647 4044). Canon's LBP laser printers also have Amiga printer drivers.

The safest way to check if a printer works with the Amiga is to phone the manufacturer and ask.

Now printer memory. There are some types of printer which don't print out a page line-by-line, they create the whole page in memory first, and then print the whole thing out in one go. All laser printers work this way, and so do some inkjet and thermal printers.

To be able to create the whole page in memory, the printer obviously needs some memory. How much memory depends on the size of the page and the resolution at which it is being printed. The larger the page and the larger the resolution, the more printer memory is required. To print a page of A4 graphics at 300 dots per inch – which is a bitmap of 2,481 dots wide by 3,507 dots high – requires at least 1.5Mb of memory. If you were desktop publishing and wanted to download some fonts to be used on this page you would require further memory, hence the 2Mb minimum recommendation.

If the printer isn't a 'page printer' then it is the Amiga that stores the bitmap, and therefore the Amiga that requires the memory. But as the print-out is being sent to the printer a 'strip' at a time, after a strip has been printed the memory it has used can generally be overwritten by the next strip, meaning that sophisticated pages can be printed with comparatively little free memory.

Having said that, it does depend a lot on how the software that is doing the printing works. For serious applications work 1Mb is never enough, 3Mb is a much more comfortable amount of memory.

IT WON'T WORK



Is the Commodore MPS-1200 printer compatible with the Amiga 500 Plus? If

so, where can I get a cable?

I've had the printer three years, having bought it with a C64, and as

I have recently bought an A500 Plus and word processing software I would like to use the printer. I've been told that there is no such cable available, and even if there was it would be so slow as to be almost useless. Is this correct?

Phil Daniels
Deeput, Surrey

Bad news, Phil. The MPS-1200 was built specially to work with the C64 and there's absolutely no way it can be connected to the Amiga because the MPS-1200 doesn't have a standard RS232 serial port.

LUCKY DIP



I have bought second-hand a Star LC24-10 printer without manual. Could you

please print the configuration for the two banks of dip switches? And which is the best printer driver to use? Oh yes, and can this printer be converted to colour?

Alex Williamson
Falkirk, Scotland

Call Star Technical Support on 0494 471111. It will advise you about dip switches and colour kits, sell you a manual and send you printer drivers – you need one called Star24Plus.

The line gets quite busy at times so be prepared to hang on or take a chance that it will be less busy when you call back later.

PRINTER POSER



I must thank you for your reply to my letter given in the July issue. As a result of a note elsewhere in *Amiga Shopper* I got *Citizen Print Manager* and now my little Citizen 120-D is giving me excellent graphics for a 9-pin.

Now I have a serious problem with my Star LC24-10 printer. It has recently developed the habit of randomly going off-line and locking up in the course of printing text from word processors (*Scribble!* and *Wordworth 1.1*). When this happens it is immediately after a carriage return and the printer has to be switched off and on to re-initiate it. It self-tests and prints graphics OK.

Star couldn't offer any help so I sent the printer to a service firm, which cleaned and tested it with a PC and a BBC and said they could find nothing wrong with it. I tested it on a relative's Amiga with my own software, and it performed OK.

I suspected the cable and the Amiga, but they drive my Citizen 120-D and HP PaintJet perfectly in all respects with the same software and cable. I have tried another cable; same thing happens. Instead of the EpsonQ driver I have tried EpsonX and Star24Plus, with

exactly the same results.

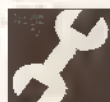
My A500 has been upgraded to Kickstart 1.3 and Workbench 1.3. It also has a BASEboard Internal 4Mb (max) memory upgrade, although I am using only the self booting 1.8Mb part of it.

Vic Trinder
Weymouth, Dorset

Hmm. The printer works fine on another Amiga and on the service company's BBC and PC, so it's not the printer; two other printers work with your Amiga and the same cable, so it's not your Amiga or cable. And the Star24Plus driver is the correct driver, the one Star will advise you to use, so it's not the driver.

Could well be an incompatibility between the printer driver and the BASEboard expansion memory. These 1.8Mb jobbies often cause weird little problems. Try removing it and see what happens. I know you say it all works fine on your relative's Amiga using the same hardware and software, but is your relative's Amiga Running Kickstart 1.3 and Workbench 1.3, and has it got a 1.8Mb BASEboard expansion in it?

BEG PARDON?



What is the expansion port in the Star LC-200 colour printer for? If it's for increasing the buffer size, which is what I think it's for, could you tell me how much it is and where to get the chip that fits in there?

Tim Price
Cwm, Gwent

This is a new one on me. The only thing on the LC-200 that could be mistaken for an expansion port is the little flap on top at the front that covers the dip switches. The LC-200 doesn't have font or RAM cartridge slots, none of Star's 9-pin printers do, only the 24-pin models.

WHICH ONE YOU GOT?



My Brother M-1009 printer produces a few extraneous characters at the top

of each page, no matter what software is doing the printing. I'm using the EpsonX[CBM_MPS-1250] driver. What am I doing wrong?

Alf Denham
Portishead, Bristol

Brother made two versions of the M-1009, and Epson compatible version and an IBM compatible version. You can tell which version you have by looking at where the cable plugs into the printer. If there is just one port it's the IBM model, if there are two ports it's the Epson one.

The Epson model emulates the Epson RX-80 and should work fine

with the EpsonX[CBM_MPS-1250] driver. The IBM model emulates the IBM Proprinter and should work with the CBM_MPS-1000 driver.

Dip switch settings could be very important. If the manual can't help you to set them correctly you'd better phone Brother Technical Support on 061-330 6531.

BETTER WP REQUIRED



I have struggled for months to get my Hewlett-Packard DeskJet printer to

print anything other than conventional fonts (as supplied with Notepad and *The Works! Platinum*) in a standard size of six lpi.

I can get bold, underlined, and italic, but cannot change the font size. I particularly need to do this for letter headings.

G Wojniak
Aylesbury, Bucks

Sigh. I keep telling people this but either they don't believe me or they don't like what I tell them so they pretend not to hear. Nevertheless, here we go again. To be able to use the fonts and features built into any printer, the word processing software needs to be able to send control codes to the printer that instruct it to change fonts, change sizes, change its nappy, or whatever.

As far as text print-outs are concerned, the printer driver's job is simply to translate the codes sent by the word processing software into commands that the printer understands. So unless the word processor specifically supports the specific fonts and features of a specific printer, all it can do is send the standard codes for standard things like bold, italics and underline.

Once again, for clarity – it is the job of the word processor, as well as the printer driver, to support the fonts and features of a printer. It doesn't matter how fully the printer driver supports the printer for which it was written, if the word processing software is not able to (for example) send codes for 'change fonts' and 'change sizes', it cannot instruct the printer driver to pass this message on to the printer.

Notepad is a next to useless piece of software. Indeed Commodore decided not to distribute it with Workbench 2.04. And the word processing section of *The Works! Platinum* – which is the cheap (£29.95) *Scribble!* software – can only do the standard printer things like bold, italics and underline.

So the reason you cannot take advantage of your DeskJet's true power is because the software you are using is not good enough. Like it or not, that is a fact.

Wordworth 1.1 can drive the

DeskJet like a dream, so can *Protext* 5.5. These are currently the only two Amiga word processors that come anywhere near close to supporting the DeskJet properly, and both cost more than £100. As cold-blooded as it sounds, the only answer to your problem is to spend some money.

IT CAN'T DO IT



I have seen that *Citizen Print Manager* can vastly improve the output from a Citizen printer. I use *Pen Pal 1.4* a lot and would love to be able to use *Print Manager* with this to improve the appearance of fonts which are not built into the printer. Is this possible?

Colin Armstrong
Bowden, Melrose

The only thing which will improve *Pen Pal*'s output of 'Amiga Text' is if Softwood re-writes the program so that it works with Amiga screen fonts in the same way as *Wordworth* and *ProWrite*. No third-party program like *Citizen Print Manager* or *Turboprint Professional* will make the slightest difference, you'll still get jagged text. It's the way *Pen Pal* works.

For higher quality output of screen fonts you'll need to buy one of the aforementioned packages, or *Final Copy*, or a DTP program that supports high quality outline fonts like *PageSetter II*, *PageStream* or *Professional Page*.

UNDERWORKED DESKJET



I have bought a DeskJet for use with my 1Mb Amiga 1500. I am very impressed with its graphical output, design and speed. It has some nice resident fonts, my favourite being CGTimes, and I would like to use it instead of the default 10pt Courier. But the font cannot be controlled from the printer, only via software using 'Escape codes and the Hewlett-Packard Printer Control Language.'

After reading both manuals briskly I decided to boot *The Works! Platinum* and give it a try, but found myself getting nowhere. To add confusion to the issue I contacted Gordon Harwood Computers and Diamond Computers to ask about it, and they both replied that the Amiga does not have a driver to support the DeskJet printer. This seems strange as I have many drivers on software such as *Deluxe Paint II*, *The Works!*, *Workbench 1.3*, and various PD disks. Is there something wrong with this driver or don't the said retailers know of its existence?

James Stoddem
Camborne, Cornwall

I assume you have a DeskJet 500 as opposed to a plain DeskJet, which was the original model released some years ago now. What the retailers have told you is basically true, there is currently no Amiga printer driver available that completely properly supports the features of the DeskJet 500. The best there is at the moment can be found on Jamdisk 8 (from *Just Amiga Monthly* on 0895 274449).

But this driver will not solve all your problems, because as well as the printer driver supporting the features of the printer, so must the word processing software. Either directly, by providing menu options to change fonts, sizes and so on, or indirectly by giving you the power to send printer-specific escape codes directly to the printer, completely bypassing the printer driver.

The Works! Platinum cannot do this. It has a rudimentary feature whereby some standard ANSI style commands can be sent to the printer driver, which interprets them and sends the appropriate escape codes to the printer, but the Amiga's ANSI style command set is sadly lacking in advanced features. It only really supports things like bold, italics, underline, line spacing, page sizes, tab positions and so on. You'll find a list of the ANSI style commands that the Amiga's printer device knows about in the back of your Amiga manual.

The answer is to buy a word processor that knows its printer's onions. For the DeskJet 500 the current choice is between *Wordworth 1.1* and *Protext 5.5*. If you are happy with *The Works! Platinum*, then I suggest that *Protext 5.5* will be more your cup of tea.

Ah, almost forgot to mention, the DeskJet you've got on various disks was written yonks ago for the original DeskJet. Things have moved on a bit since then, which is why it doesn't work with the DeskJet 500.

WOLF AT THE DOOR



Could you suggest a printer driver to use with my Olivetti DM124C, which has Epson LQ-2550 emulation? I am currently using EpsonQ, which is OK with text but not so good with graphics; all the colours are too dark and there is an occasional small gap within a graphic dump, possibly a tractor feed problem.

Steve Atkins
BFPO

Amiga printer driver writer extraordinaire Wolf Faust has just finished developing a BJC-800 driver for Canon, which is another printer that can emulate the Epson LQ-2550, and I suggest that this is the

driver you require. But how to get it? Well, I know you are based in Germany, Steve, so send DM20 to Wolf at Am Dorfgarten 10, W-6000 Frankfurt 50, and I'm sure he'll forward you a copy.

COMPUGRAPHIC FONTS



I intend using Compugraphic (CG) fonts with *Wordworth 1.1* but have run into a difficulty. I do not possess a hard drive but would like to use these scalable fonts with *Wordworth's* UltraPrint feature. The three fonts that came supplied with *Wordworth* (Byron, Blake and Coleridge) are of limited use, and scalable fonts provide great variety.

Would it be possible, for example, for me to use the PD Compugraphic type fonts that are now being advertised? It appears that these fonts have been converted to *Professional Page* and *PageStream* format; are they compatible with *Wordworth*?

Having installed Fountain on the Extras disk I am still experiencing difficulty with it, namely the Outline Font Source and Destination Font Drawer windows. I am but a mere beginner and would greatly appreciate an explanation of how you use this program.

Finally, what is the output quality of these CG fonts like compared to the internal fonts of, for example, a Canon bubble jet?

Kris Hunt
Croespenmaen, Gwent

Sure you can use CG fonts without a hard drive, but they are fairly big files so they can be cumbersome to handle on floppies and can take a little while to load. Fountain is able to understand the Compugraphic files that *Pro Page* uses, so it can convert these PD CG fonts to its own format. It will want (by default) to save the resultant files in the FONTS: and FONTS:_Bullet_Outlines directories (ie on your Workbench disk) and total file sizes can vary from 30K to 150K.

Fountain is quite simple to use. After running it press the Help button and follow the instructions. Source means the disk and directory from where the CG font is to be loaded, Destination means the disk and directory where the converted data will be saved.

Loading, scaling and printing any outline font takes time and memory, and Compugraphic fonts are no different. *Wordworth's* output of CG fonts is excellent, very high quality, but whether it is worth the wait or not is arguable. There are more CG fonts than fonts built into any printer, but printer fonts are generally of (at least) equal quality and print

thousands of times more quickly. (And I do not exaggerate).

Given an accelerator, a fast hard drive and lots of memory, Compugraphic fonts are wonderful things, but on a floppy-based, 1Mb Amiga 500 Plus they are a right pain in the wosname.

NO CONTEST



I noticed with great interest the article in Issue 16 (page 11) about the 'cheap'

Kodak Diconix 150 Plus printers for sale. I have been considering upgrading from my Nec P2+ and this opportunity seems most interesting. But first I need a little advice...

My primary printer use at the moment is printing small cake and pie labels for my family's bakery business. With the Nec in condensed mode I can squeeze 16 labels on to one A4 sheet. But the quality, even though it's a 24-pin printer, can be a bit scratchy.

Also there is the inherent problem with producing good quality graphical output and using Amiga screen fonts rather than the printer's own in-built fonts. Amiga screen fonts are printed as graphics, is there anything I can do to improve their output quality? The word processor I use is *Pen Pal*.

I have been thinking about the Canon BJ-10ex as a not too-expensive high quality printer, but I haven't got around to getting any technical specs for any other printers. Can you give me a quick opinion of what I should be looking for? How do the Kodak and the Canon shoulder up to each other?

Ian Deaville
via the Sunbury BP Research Centre
fax machine

Given a choice between the new technology Canon BJ-10ex, which has a good Amiga printer driver, and the old technology Kodak Diconix 150, for which there is no proper Amiga printer driver (only a hacked EpsonX driver), there is no choice: the BJ-10ex is light years better. It's not the fastest printer in the world, but you can't have speed and quality at that price. The BJ-10ex will do all you want it to do, and more.

Your problem is the word processor. Output quality from *Pen Pal* of Amiga screen fonts is bad, as you know. There's nothing to be done, except to buy a better word processor. I promise you that the best quality printer in the world would not give better quality screen font output from *Pen Pal*. The program cannot do any better. I suggest that *Wordworth 1.1* will be right up your street, giving you quality and flexibility. It even comes with the correct printer driver for the BJ-10ex.

Award winning innovative products from

Scanners

"If your in the market for a hand scanner then forget the rest and get Powerscan"

Amiga Format July 1992

Power Scanner v2.0



- 100-400 DPI scanning resolutions
- 64 greyscales
- Thru'port for printer
- Award winning editing, image manipulation & scanning software

Power Scanner v2.0£99
Power Scanner Colour£239

Epson GT-6000



- 600 DPI Colour flatbed scanner
- 24-bit colour
- A4 reading area
- Software included

Epson GT-6000£999

Epson GT-8000

- 800 DPI colour flatbed scanner
- 24-bit colour
- A4 reading area
- Software included
- Amazing scan quality

Epson GT-8000£1199

Upgrade Offer

If you consider your scanner system to be inferior to the Power Scanner, we will happily upgrade your software and interface. (Power Scanner is compatible with most scanning heads)

Upgrade£49.95

The Amiga can only display 16 greyscales

Floppy Drives

"This drive contains more gadgets than Batman's utility belt"

Amiga Computing Feb 1992

PC880B Power Drive



- Award winning drive manufactured by Power Computing
- Super slim design
- Anti-click (Cures that annoying click)
- Virus blocker (Prevents viruses)
- Built-in backup hardware

PC880B with Blitz Amiga£65
PC880B with Blitz & XCopy£90
PC880B (Cyclone compatible)*£70
PC880B in black case£65

*This drive is only available to registered owners of XCopy Professional. You must provide proof of purchase at XCopy Professional

Power Drives

PC880E Economy drive£49.95
PC881 A500 Internal drive£40.00
PC882 A2000 Internal drive£45.00

Dual Drive

- Two high quality disk drives built into one compact unit
- Same features as PC880B

Dual drive£125

Drive Accessories

A500 Internal anti-click board£9.95
Maxell multi-colour disks (10)£9.95
Floppy disks bulk supplied£POA

Blitz Amiga

- Backup disks at lightning speeds
- Stops all external drives from clicking
- Contains anti-virus from being written into the bootblocker

Blitz Amiga£20

RAM Expansion

Blizzard Turbo

- A500/A500+
- Expand up to 8MB (OK installed)
- Memory and 68000 CPU run at 14.28MHz
- Fast 68000 processor already installed on-board
- Fully auto-configuring

Blizzard Turbo£169

RAMs continued

A600 Memory Cards



1MB RAM with clock£49.95
1MB RAM without clock£45.00

PC501+ RAM Card

Our RAM board is designed especially for the A500+ computer and comes with 1MB of RAM on board to expand your memory to 2MB of chip RAM. Plug-in and go operation (Fits into the trapdoor)

PC501+ RAM card£39.95

8MB for any A500

- Plugs into side slot, fully auto config, full thru'port. Expand 2MB-8MB

2MB £109 4MB £169 8MB £289
1 x 4ZIP chips£14.95

2MB for any A500

- Economy 2MB RAM externally cased
- 16-chip (1 x 1 DIP)
- No thru'port

2MB RAM£79

1.5MB RAM Board

- Fully supports 1MB of chip RAM
- Fully compatible with Fatter Agnus (Kickstart 1.3 and above, not compatible with A500+)
- (Your Amiga needs to be opened, this may affect your warranty)

1.5MB RAM board£75

1MB with Thru'port

- Expand your A500's memory up to a total of 2MB without disposing of your existing 512K upgrade
- Works with 1MB of Chip RAM

(512K RAM must be 4 chip type or not exceeding 9cm in length) (Your Amiga needs to be opened, this may affect your Warranty)

1MB with thru'port£45

A500 RAM Card

- 512K RAM expansion with clock & free software (A500+ compatible)

512K RAM (4 chip)£29
512KRAM without clock£24
512K RAM (16 chip) with clock£24
512KRAM (16 chip) without clock£19

Auto ROM Sharer



- Kick-off is the latest Amiga add-on from Power
 - One of the most advanced kickstart RDM sharers available
 - A clever design on a small reliable board
 - Fits A500, A500+, A600, A1500
 - Kickstart RDM can be selected from the keyboard
 - No messing about with switches
 - Only one compact board to plug-in
 - No "CIA adaptor" or other trailing wires
 - Jumper to select which RDM boots on switches
 - Compatible with old Amiga board revisions
 - Simple internal fitting*
- * Kick-off requires the lid to be removed from the Amiga. This may invalidate your warranty.

RDM Share	£17.95
RDM Share inc. kickstart v2.04	£55
RDM Share inc. kickstart v1.3	£39

Kickstart v2.04

2.04 Kickstart (chip only)	£39.95
2.04 Kickstart RDM, workbench software, install disk 2.04, font disk & extras	£99.95
2.04 kit with ROM sharer	£115.00

Joysticks

- Made by Duickshot
- High quality construction
- Ergonomic Bio-grips
- Turbo-fire capability

Aviator 1

- Aircraft control yoke
- 4 fire buttons
- Turbo fire
- Altitude / level indicator
- The ultimate joystick
- Player 1/2 selector

Aviator 1	£35.00
-----------------	---------------

Intruder 1

- Dual speed turbo fire
- Omnidirectional grip
- Eject button for fire button cover

Intruder 1	£29.99
Maverick 1	£15.99
Python 1	£9.99
Apache 1	£7.99

A500 Hard Drives

GVP A530 Turbo HD



- 40MHz 68030EC accelerator
- Optional 68882 maths co-processor
- Up to 8MB 32-bit FASTRAM on-board
- Award winning

52MB HD 0MB RAM	£729
105MB HD 0MB RAM	£869
240MB HD 0MB RAM	£1069
68882 Upgrade kit	£239

GVP Series 2 HD

- Up to 8MB FASTRAM on board

52QMB 0MB	£349	105QMB 0MB	£479
52QMB 2MB	£399	105QMB 2MB	£529
52QMB 4MB	£450	105QMB 4MB	£579
52QMB 8MB	£529	105QMB 8MB	£719

ICD Novia Internal HD

- Fits inside your Amiga 500
- Comes complete, just plug-in and go

Novia 60I 60MB HD	£359
Novia 85I 85MB HD	£459

ICD Flicker Fixer

Flicker Free Video 2

- Stop that annoying flicker
- Fits internally in the A500
- Multi-sync monitor required

Flicker Free Video 2	£199
NEC 4FG Multi-sync monitor	£549

Chips

4MB x 8SIMM	£90
1MB x 8SIMM	£25
256K x 4DRAM	£4.00
1MB x 1DRAM	£3.95
1 x 4 ZIP	£14.95
1 x 4 DiP	£19.95
A3000 Static column RAM	£19.95
SIMM 32 x 1MB-60	£65
SIM 32 x 4MB-60	£243
(These chips cover most memory & hard drives i.e. GVP, Supra, Commodore)	

Commodore A600

- The new compact Amiga 600
- Built-in TV modulator
- Workbench & kickstart 2
- Enhanced chip set
- 1MB of RAM
- IDE Hard disk controller built-in
- Credit card size RDM & RAM slot

A600 with 2MB	£339
A600 with 20MB inc. 2MB	£499
A600 with 40MB inc. 2MB	£539
A600 with 80MB inc. 2MB	£639

See memory section for latest A600 RAM cards

A600 Internal HD

IBM 40MB Internal HD	£299
IBM 80MB Internal HD	£399

Commodore CDTV



- CDTV player
- Welcome disk + caddy
- Keyboard
- Floppy disk drive (black)
- Wired mouse
- Workbench 1.3 and manuals
- Infrared remote control

CDTV multi-media pack	£599
-----------------------------	-------------

CDTV Software

A Bun for Barney.....	£29.99
Barney Bear goes camping	£29.99
Battlechess	£39.99
Case of the Cautious Condor	£34.99
CD Remix v2	£34.99
Fred Fish CDPD Collection	£19.95
Fun School 3 (under 5's)	£24.99
Fun School (5-7yrs)	£24.99
Fun School (Over 7yrs)	£24.99
Guinness CDTV Disc of Records	£34.99
Illustrated Holy Bible	£29.99
Music Maker	£34.99
NASA Heroic Age of Space	£19.99
Power Pinball	£29.99
Sim City	£29.99
Trivial Pursuit	£49.99
World Vista Atlas	£54.99
Xenon 2 Megablast	£29.99
More titles available	

POWER

Award Winning Manufacturers

Power products come with full technical support

"The Power Mouse is my pick of the month" CU Amiga

PC880B 'Well worth spending your hard earned pennies on, an excellent buy' Amiga Computing

Dual Drive 'Now this is a bit special' Amiga Computing

Power Scanner Amiga Shopper Best Buy

Power Scanner Amiga Format Gold

"Power Scan is quite simply the best Amiga hard scanner available" Amiga Format

Credit Card Hotline

0234 843388
10 LINES

Fax 0234 840234

Technical 0234 841882

VAT included
Delivery included

Next day delivery £4.50
(UK mainland only)

Power Computing Ltd
Unit 8 Railton Road
Woburn Road Ind. Estate
Kempston Bedford
MK42 7PN



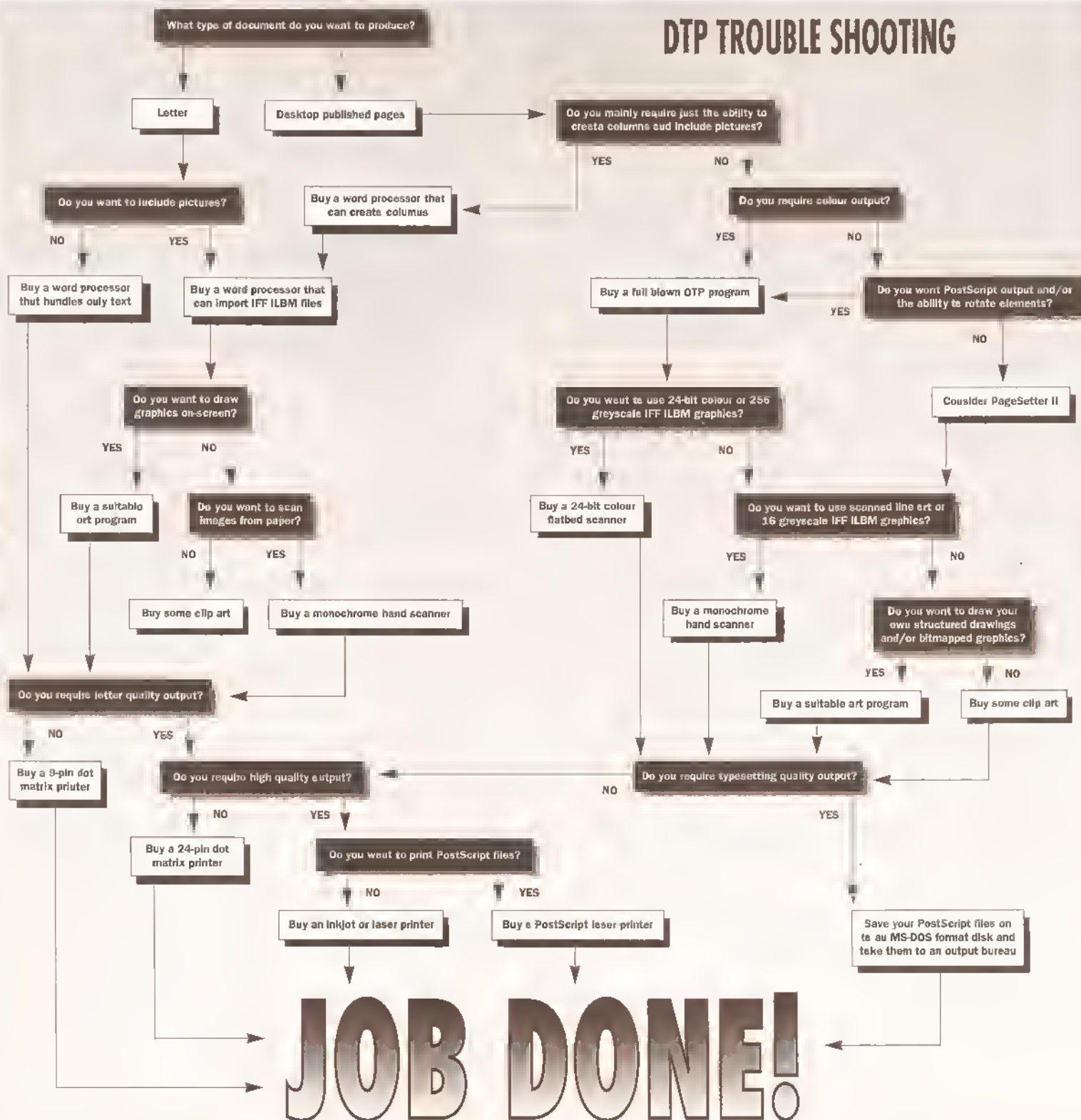
Established 1985

Specifications & prices
subject to change with out notice
All trademarks acknowledged

DTP...

From fonts to file transfers and colours to greyscales, Jeff Walker gives the answers to desktop publishing without tears...

DTP TROUBLE SHOOTING



DIFFERENT STANDARDS



I have upgraded to an Amiga 1500 Plus with GVP hard drive and 5Mb of memory.

I own version 1.1 of PageSetter II.

The only outline font that comes with PageSetter II is CGTimes, so I would like to use the LetterGothic and CGTriumvirate outline fonts supplied with Workbench 2.04 as they give superior output to bitmapped fonts.

However I am having trouble installing these as PageSetter II does not seem to recognise them. The file formats seem different. Can you help?

Edward Campton
Scraptoft, Leicester

Like most so-called standards, AGFA's Compugraphic standard has a few variations.

The standard that PageSetter II adopts requires three files to be present in your CGFonts: directory – "fontname.atc" (the encoding table), "fontname.metric" (the spacing information) and "fontname.lib" (the font definition). Funnily enough, the font definition file would appear to have the encoding table and spacing information in it, it's just that PageSetter II prefers them to be in separate files.

The standard that Workbench 2.04 uses has just the one file, "fontname.type" in the "FONTS:Bullet_Outlines" directory, which is exactly the same format as as the "fontname.lib" files that PageSetter II uses. The difference is that Workbench would appear to be extracting the encoding table and spacing information from this one file.

(There are several other files Workbench 2.04 requires for Compugraphic fonts – "FONTS:fontname.font", "FONTS:fontname.otag", "FONTS:_Bullet/plugin.types", "FONTS:_Bullet/lf.fnt", and "FONTS:_Bullet/lf.ss". When and if I ever find out exactly what these files do, you'll be the first to know. All I can tell you at the moment is that the "plugin.types" file is exactly the same as the "PlugIn.TypeBucket" file that PageStream uses, and that it appears to contain one lot of encoding and spacing information plus the definitions of five typefaces. I'm sorry about all the vagueness but the exact ins and outs of the Compugraphic format are available only by buying a license from AGFA for a large amount of money, and even if I did cough up the cash I wouldn't be allowed to tell you the details. If, on the other hand, I can work it out for myself...)

So to be able to use PageSetter

II with the Compugraphic fonts supplied with Workbench 2.04 you would need to be able to generate a "fontname.lib", "fontname.atc" and "fontname.metric" file from the Workbench "fontname.type" file. Theoretically speaking, that is, because there isn't currently a program that can do this, so I can't check it out.

For more Compugraphic typefaces that can be used with PageSetter II you should consider buying the Outline Fonts Pack (the 'classic 35' Adobe typefaces) or contact George Thompson Services (0707 664654) or EM Computergraphic (0255 431389) and ask for details of their cheaper shareware and PD Compugraphic typefaces.

POETRY IN (NO) MOTION



I occasionally require high quality colour output from

Wordworth 1.1 Rev 6.

How much would it cost per page for A4 black-and-white text, colour text, and full colour graphics?

Would a DOS transfer program maintain typeface size, colour and pictures if a document created by Wordworth was saved to disk as a PostScript file?

John Arcus
Bury, Lancs

Um. We have a problem straight away here because Wordworth wasn't designed to create colour PostScript files, only monochrome ones. This means that any colour in your Wordworth-created PostScript documents will get turned into shades of grey.

To create colour separations, or colour PostScript files for printing on colour PostScript printers, you'll need a more sophisticated program; I notice you don't have a hard drive, so it'll have to be PageStream because Professional Page requires a hard drive these days.

As for prices, well the best way to find out is to approach a few DTP bureaux and ask.

Speaking in general terms, for Linotronic output you will have to pay for the time it takes the imagesetter to produce your films – about £15 per separation, but it could be more or less, and you need four separations for each colour page (for the cyan, magenta, yellow and black parts of each page), or just the one for monochrome. Then there'll be the cost of making the plates (one for each separation), and the cost of reproduction, which will depend on how many you want reproduced and what kind of paper you want to print on to.

High quality, full colour output is expensive. Certainly prohibitively

expensive unless the output is going to be reproduced in fairly large volume. If you want just a few colour pages, forget it.

High quality monochrome output is not so expensive. You should be able to get a couple of thousand double-sided, monochrome A4 leaflets printed for under £100 almost anywhere.

Phone around to find out the best prices. And don't forget that the firm that is doing your imagesetter output doesn't have to do the reproduction as well. Films in hand, you can take them to any printing firm to be made into plates and reproduced if it works out cheaper that way.

If you want to pick certain parts of your document out in one or two solid colours – a technique known as 'spot' colour – this needn't cost the earth. An extra film will have to be produced containing just those parts of the page that are to be printed in each colour, but this will add only about £50 (tops) to the cost of your print run.

Many DTP bureaux will own a colour 300 dpi PostScript printer and will be able to print full colour 'one-offs' on this quite reasonably. But colour PostScript output may not be what you are after, if you've never seen such output it's probably nowhere near as good as you are expecting it to be. Ask to see a sample before committing yourself.

As for transferring PostScript files on to MS-DOS disks, PostScript is PostScript, the whole beauty of it is that it doesn't matter which computer produced the PostScript file, any computer will be able to

print it on any PostScript device, provided it is in a format that your particular computer can read – which basically boils down to the file being on an MS-DOS disk or Macintosh disk, although a few bureaux will accept Amiga disks.

CONFUSING MOVING



Protext is a marvellous word processor, but I get so confused copying

blocks of text between several documents, especially when I happen to have a block marked in more than one document.

I regularly work with between 5 and 15 documents open at once, and yet I still haven't managed to master the technique using the keyboard; I'm forever moving or copying the wrong block into the wrong document, even when I'm sure that this time I've got it right. There must be an easier way. Hmm?

Spencer George
Preston

Yeah, makes your hair fall out sometimes, doesn't it?

Tell you what I do, I use the Split Screen option (Ctrl-Shift-X) and make sure I have the document I'm copying to visible in the upper window and the document I'm copying from visible in the lower window. Then I click in the from window, mark my block, click in the to window, move the cursor to where I want the block to be inserted, then press Ctrl-O to copy it. Another Ctrl-Shift-X unsplit the window, and off I go again.

JARGON BUSTING • JARGON BUSTING • JARGON BUSTING

Compugraphic fonts – Rather than a simple bit-mapped image of each character which grows more jagged with magnification, a Compugraphic font has each of its characters represented as a mathematical shape. Consequently, as the magnitude of the character is varied in printing no information is lost and the result always looks smooth.

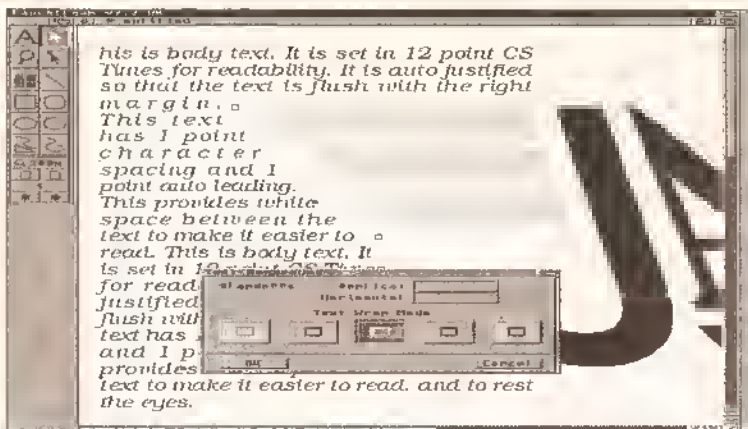
Font – The group of letters, numbers and special characters that comprise one variation of typeface, eg: 12pt Times, 12pt Times Bold, 12pt Times Italic.

PostScript – A powerful mathematical language used to describe graphics and text images to compatible printers. Because it does not rely on a pixel system, objects can be scaled and rotated without distortion or loss of detail.

Printer driver – A program that sits between any applications program producing output and the printer. It converts codes describing text and graphics formats into a form suitable for a specific printer.

Typeface – All sizes of a particular type family and style, eg: Times Italic, Helvetica Italic, Courier Bold.

Type family – All variations and sizes of a typeface, eg: Times, Helvetica, Bookman.



With PageStream, it's easy to run text around pictures or drawings. Just select the Text Runaround option from the Object menu

COLOUR COMPOSITES

A I print in colour on my DeskJet 500 using the colour separation mode in PageStream and passing the paper through the printer four times using four different coloured ink cartridges.

I have read that the same thing can be done in Professional Page, which I own also, but it seems you have to use the PostScript Output requester to do separations, and I can't print PostScript to my DeskJet 500. Is there a way around this?

Also, how do I run text around structured drawings in PageStream. I seem to get a "box looking text" every time, like you do when you use a bitmap graphic.

R5 Jeffery
Castle Donington, Derby

Professional Page wasn't designed to print colour separations to non-PostScript printers. The only way around it would be to use a software PostScript interpreter like SaxonScript Professional to print them. Or use PageStream, of course.

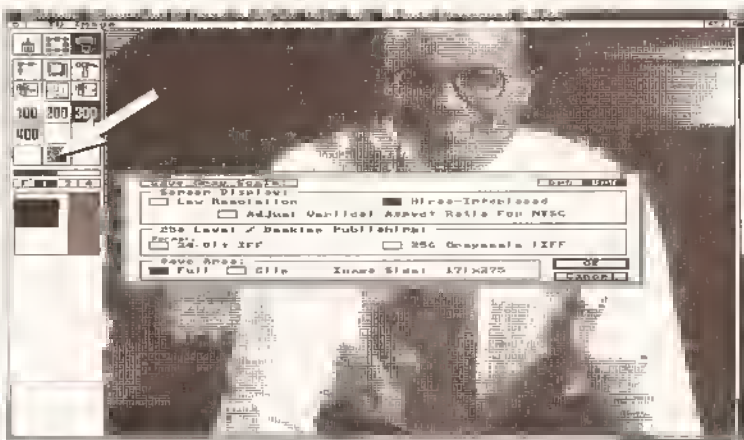
To run text around the contours of structured drawings in PageStream, click on the object and then select the Text Runaround option from the Object menu (or LeftAmiga-T) and choose the type of runaround you want.

There's a screenshot somewhere around here which shows you what this requester looks like. Baffles me why you can't do this, there are easy-to-follow, step-by-step instructions on page 4.27 of the PageStream manual.

ROTTEN SCANS

A I have a Golden Image hand scanner. It's working OK if I scan black-and-white line art images for DTP work, but for scanning photographs it's not working too well.

It seems that the Touch-Up scanning software has only four shades of grey, so my pictures are



The arrow points to Touch-Up's Save as Greyscale button. Easy - when you know where to find it!

rotten. How can I get more shades of grey? Is there any other scanning software I can use perhaps?

Marcel Dopheide
Soest, Holland

If you have an early version of Touch-Up, version 1.1 or something like that, it doesn't have a 'View Greyscale' option, but it can save the scan as a 16 greyscale IFF. Click the 'Save As Greyscale' button and a requester will appear. Depending on what version of Touch-Up you have it may look like the one in the screenshot (which you can see directly above) or it may be something simpler.

After saving the greyscale you'll need to load it into an art package to see it in all its glory.

Although the scanning heads that come with Amiga hand scanners are all the same these days, Touch-Up is the only scanning software which works with the Golden Image hand scanner and interface. If you want different software it means buying another interface as well. Power Computing in the UK will sell you the Power Scanner interface and software separately from the scanning head (this software is much better for greyscales) but it might work out cheaper for you to buy the whole Power Scanner package in Holland.

NAUGHTY NAUGHTY



I have ProWrite 2.5. When printing for the first time after running, it prints fine, but subsequent prints crash the machine.

Some people have told me that I do not have enough memory. Is that right?

I have an Amiga 500 (not a Plus) with a 512K trap door expansion and Kickstart and Workbench 2.x.

Avall tells me that I have 407,360 total memory, 365,870 bytes of which is chip memory. I

slant as well as rotate.

Without a hard drive the only sensible options are PageSetter II and PageStream.

If you are talking about the quality of printed output, this mainly depends on the output resolution of your printer, although PageStream's bitmap graphics output leaves a lot to be desired.

So we've arrived at an answer: The best DTP system for using with 16 greyscale scanned photographs if you don't have a hard drive is PageSetter II. If you do have a hard drive the answer is, Saxon Publisher, remembering that we are talking solely about working with 16 greyscale IFF ILBM graphics.

For bending text (and implementing many other effects) you need a structured drawing package. Professional Draw 3 can create 'clips' that PageSetter II can import, so this would seem the obvious one to go for, but you might also like to consider Expert Draw (reviewed in Issue 14), which is a bit cheaper and perhaps a tad easier to learn how to use, although it doesn't have as many features.

NOW YOU SEE IT...



Last week I carried out the modification to my Amiga 500 to increase the Chip

RAM to 1Mb. I have a 2Mb Spirit Xram expansion, and Avall now tells me that I have 3,137,272 bytes total memory, 1,040,152 bytes of which is Chip RAM. All went nicely until I tried to use PageStream 2.2, when I soon found out that something is not kosher.

Loading the Times typeface to its maximum listed size and then applying the Outline style and resizing to a larger size - as I have done many times before - I was rather startled to see a band about two inches deep at the top of the screen which looked like the horizontal hold had gone wacky.

When I tried to print it, the printer started up, printed the first letter of three and then drew garbage until I switched it off.

After a few more attempts I discovered that provided I didn't re-size the font on the screen, all went well. Over to you, Jeff.

J Joyner
Lytham
Lancs

don't know which Agnus chip or PCB revision I have either.

Chris Whitworth
Sunningdale, Berks

Sounds to me like you have an old 512K Chip RAM machine and you are running a disk-based version of the new Kickstart ROM, probably one of those 'beta-test' versions that a number of disreputable PD libraries were selling before the real thing was released. I'm not surprised ProWrite is crashing. Lots of other stuff will probably crash as well. Write again when you've upgraded properly.

PHOTOS & BENT WORDS



Which is the best DTP system for using with 16 greyscale scanned photographs, and is there a DTP program that can bend text in the same way that Deluxe Paint can?

Patrick Taylor
Selston, Notts

Hmm, you could have expressed your first question more precisely. What do you mean by 'best'?

All the Amiga DTP programs (including PageSetter II) can import, re-scale and print 16 greyscale IFF ILBM graphics. Professional Page can rotate them as well, PageStream and Saxon Publisher can twist and

Heek! To get 1Mb of Chip RAM after the modifications have been made you need a 512K RAM expansion in the trap door, one of the four-chip versions rather than the old 16-chip jobbies (like the Commodore one).

Although Avall thinks you've got 1Mb of Chip RAM (because that's what the motherboard is telling it),

there's only 512K of it actually there. The 2Mb in the Spirit Xram is all fast memory.

PRO PAGE BUG?



I have a Power Scanner (version 2.0) that I use to make up presentations with

Professional Page 1.31. The scans are taken from an engineering drawing which is 340mm long.

The files created can be loaded into *Professional Page* without problem, but if I use the *PowerScan* software to rotate the scan by 90 degrees, so that it can be imported into *Professional Page* and presented across a page, the file will not load - "Error while reading file" is displayed.

The file seems to be OK as it can be loaded into *Deluxe Paint*.

If this same scan is converted to grey and rotated by 90 degrees, it will then load into *Professional Page* but the print-out is naff.

**MJ Fuller
Darras Hall, Ponteland**

It's a bug in *Professional Page* 1.31's IFF import routine. If I remember correctly (and it was over two years ago now) I solved a similar problem by loading the graphic into *Deluxe Paint* and then re-saving it from within *Deluxe Paint*, after which the graphic imported into *Professional Page* OK.

You really ought to consider upgrading to version 3.0, it's light years better (and faster) than 1.31.

I WANT A ' PLEASE



How do I get Protext 5.5 to display a reverse apostrophe on-screen at the

press of a key? At the moment every time I want to use it I have to select it by mouse from the Text/Choose Character requester, which is a real pain in the backside. I can't find it anywhere on the keyboard.

**William Stevens
Twickenham, Middx**

This can be rectified by *Protext*'s configuration program. Run Config and select Main Configuration Menu, and from there select Keyboard Options. Now select the bottom option in that requester, Redefine Keyboard Layout.

You will be asked to press the key you want to redefine. For the sake of this example press the apostrophe key (to the left of the number 1); we are going to redefine Shift apostrophe so that it displays a reverse apostrophe instead of the tilde character.

A slightly daunting display appears showing what will happen

when that key is pressed in conjunction with various other keys, like Shift and Ctrl for example. The prompt is asking us to press the E key to edit the definition. So press it.

Another little display appears. Press the right-arrow key once so that the position underneath S (for Shift) is highlighted, and press Return. Now we can enter the ASCII value of the character we want *Protext* to display when we press Shift-apostrophe. The ASCII value for the reverse apostrophe is 96, so type this into the gadget and press Return again.

That's it. Done. Press the Esc key four times to get back to the front menu panel, then Save the new configuration (accept the default filename) and Quit.

Next time you run *Protext*, Shift-apostrophe will cause a reverse apostrophe to be displayed on the screen, and when the document is printed a reverse apostrophe, or your printer's idea of a reverse apostrophe will be printed.

TRACE TRACKED DOWN



I need to convert bitmap clip art into structured drawings so that I can re-size

them at will without introducing jagged edges. I understand there is a small utility called Trace that does this. Where can I get hold of this program, or something similar.

**Graham Sparke
Whitchurch, Wales**

The Trace program is part of the *Professional Draw* package and cannot be bought separately. The version distributed with *Professional Draw* 3.0 is considerably better than previous versions.

You should understand that even a small and fairly simple piece of two-colour bitmapped line art can turn into a large, memory munching structured drawing after being traced.

WHERE ARE THE CG FONTS?



I recently upgraded to Workbench 2.04 and tried to use the scalable fonts with

Wordworth 1.1 Revision 6, but when I select Typeface-Other from the Format menu, Wordworth ignores the scalable type fonts.

I've checked that the fonts are actually on my hard disk, I've run the *Fixfonts* program, and I've tried again, but I can't get it to work.

What am I doing wrong. Wordworth does support scalable fonts, doesn't it?

**Chris Myers
Middletown, Leeds**

On the Fonts disk that came with *Workbench* 2.04 you'll find a file

called *diskfont.library* in the LIBS directory. This is the version of *diskfont.library* that supports scalable fonts, and you need to copy it to your DEVS: directory, overwriting the much smaller file of the same name that is already there.

Then re-boot the machine, run *Wordworth* again and you'll find that you will now be able to use the *CGTimes*, *CGTriumvirate* and *LetterGothic* scalable typetaces.

SHOPPING LIST



I own an CDL A15DD with a 100Mb

Quantam hard disk drive partitioned into

two 50Mb divisions name QDHO and QDH1, I have Workbench 1.3.2 on QDHD and Workbench 2.1 on QDH1. My machine was bought about two years ago. I have all of the latest Amiga 50D Plus chips on-board apart from the 2Mb Agnus, and I have 1Mb of Fast RAM and 1Mb of Chip RAM. (I have had my board altered to allow me to use the 1Mb of Chip RAM.) I also have a Cumana CAX 354 3.5in second disk drive mounted in my CDL case. I am using a Citizen 224 colour printer and the Citizen Print Manager driver.

I wish to purchase the following items for my computer and was wondering if you could guide me toward the best programs.

1. A hand held scanner. I am interested in the *Power Scanner* as it is reasonably priced and seems to be quite popular. Is this a good buy or is there something better around in the same price range?

2. A word processor with graphics. I am considering *Pen Pal* but, with the arrival of *Final Copy* I am not sure which of the two would be the best.

3. A desktop publishing package. I will only need to use black and white so I was wondering if *PageSetter II* would be suitable for my purposes, or would *Professional Page* be more what I am looking for?

4. An Inkjet printer. I would be using it mainly for printing out DTP work and scanned images. Would the *Commodore 127DA* be OK for this or would my *Citizen 224* give better results?

5. A RAM expansion. I can place another 1Mb in my hard drive, giving me 3Mb total memory. Would this be enough for *PageSetter II* or would I have to buy an external RAM expansion with a throughput? How much memory would you recommend?

**Matthew Boyden
Werrington, Peterborough**

You're using *Workbench* 2.1? But it hasn't been released yet. So any copy you may have (illegally) picked

up from anywhere will be a beta-test version and bound to cause problems, problems that we at *Amiga Shopper* won't be able to help you with until the finished item is released. You'll be better off with *Workbench* 2.04 until 2.1 is released properly.

I can answer questions 1 to 3 quickly. In my hand scanner round-up the *Power Scanner* came out top; in my DTP roundup *Professional Page* came out top; if you are going to buy a DTP program there's no need to buy a word processor that supports graphics, but Mark Smiddy's recent review of *Final Copy* said that it was better than *Wordworth*, and in my roundup of word processors I said that *Wordworth* was better than *Pen Pal*. It follows that between us we reckon that *Final Copy* is better than *Pen Pal*.

If you are going to buy an inkjet printer the low-end choice is between the *Canon BJ-10ex* (or clone) and the *DeskJet 500* (or clone).

And for what feels like the three-millionth time this year: desktop publishing requires as much memory as you can afford. There is no "this will do" figure, but 2Mb is the absolute minimum, which means the program will run but you won't be able to do an awful lot with it. For creating documents of more than a single page, a more realistic minimum is 6Mb.

BARK UP WRONG TREE



I have a copy of Pen Pal, a superb word processor which is more than adequate

for my requirements. But it does not say in any of the documentation how to save an altered graphic that has been imported and edited within the program.

I have several clip art disks containing dozens of pages of IFF graphics, and after importing a page and then cropping the required picture for use I find if I try to save it, it will save as "filename.WTR" but will not reload, the program saying "IFF file not found". How do I crop a clip art page and save the required picture as an IFF file that *Pen Pal* will recognise?

**Brian Doolan
Castlehill, Scotland**

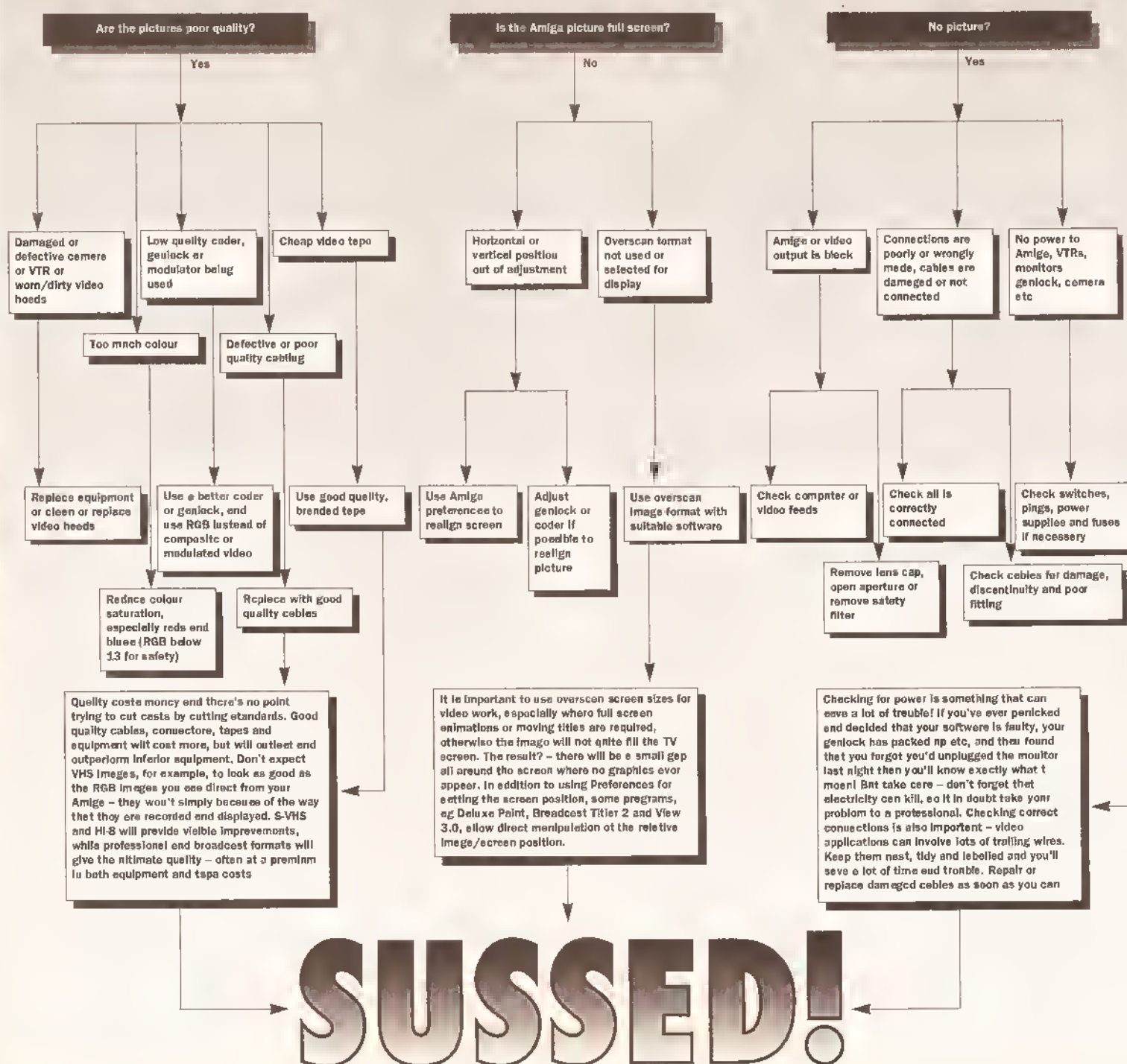
Pen Pal is a word processor, not an art or painting program, so it cannot edit and save IFF IIBM graphics.

What you need to do is load your "pages" of clip art into an art program (*Deluxe Paint* for example), cut each of the images out as brushes, and then save each brush (and therefore each image) under a different filename. These individual brushes can then be loaded into *Pen Pal* as and when required.

VIDEO...

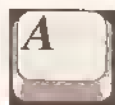
Jinxed by genlocks, flummoxed by flicker or dumbfounded by digitisers? Worry no more with Gary Whiteley's video solutions...

VIDEO PROBLEM KILLER



SUSSED!

BETTER QUALITY



I have an Amiga 500 and I use a modulator to connect it to the aerial socket of my TV set so that I can see what I'm doing. I thought I was getting on OK until yesterday when I saw my friend's new Amiga set-up. The quality of his video output is much better than mine. Why?

**Keith Wilson
Davertry**

Well Keith, my guess is that your friend has his computer connected to an RGB monitor, which makes a world of difference to the output quality. In simple terms, the reason for this is that the Amiga can output RGB directly and by connecting straight to an RGB monitor a superior picture will be obtained. One of the main technical reasons for this is that colour monitors and TVs all use RGB to produce their pictures by exciting a matrix of red, green and blue phosphor dots (which are printed on the face of the video tube) with electrons. The result is the production of coloured light in proportion to the RGB feed, thus reproducing the original picture on the screen.

Now, you might be wondering why your TV doesn't look as good as your friend's monitor, even though it produces the picture in an identical way. Time for some more technical stuff...

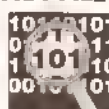
In order to transmit pictures from a studio camera or VTR to your television they are first converted from their original RGB format (colour TV cameras are like reversed TV tubes, producing electrical signals as light falls on RGB sensors) into something which can be more easily transmitted, includes simultaneous sound, and can be understood by your TV. The result is an RF (Radio Frequency) signal which is picked up by your aerial and decoded again by your TV set into sound and RGB, which results in what you hear and see. However, because the initial coding reduces the quality by compromising the signal somewhat – and then the subsequent decoding reduces it even more – the resulting quality is visibly inferior to the original RGB signal. Of course, the results depend largely upon the quality of the coder/decoder equipment and it can be safely assumed that a broadcast transmitter will give results superior to a computer modulator costing a few pounds. Since the full scale of a video signal is only 1 volt, and it is also being electronically coded and decoded, this degradation is hardly surprising!

By analogy with the television

transmission system, the Amiga produces the RGB signals and the modulator converts them to a form which your TV set can tune into via the aerial socket, hence coding and decoding them to produce the output you see on your TV – and degrading the quality in the process. By cutting out the conversion stages and using the RGB signals a much better picture is produced.

Marked improvements over using the aerial socket with the modulator can be made by using the composite video output from the modulator instead – if you have a monitor which can accept it – but for the best quality (short of buying a multisync monitor and flicker fixer) you should really purchase a proper RGB monitor to get the full benefits of the Amiga's RGB output. A wide range of monitors are available – from Commodore, Philips and others, as well as SCART (EuroConnector) equipped TV/monitors.

VIDI FILE CRUSHER



I use the Rombo Vidi-Amiga to grab frames in black and white from my video

recorder. As these files are over 41,000 bytes each I was wondering if there is any way of crunching them so that I can get more than 20 on a disk? I've tried various packages and they all fail, reporting 'No Hunk Available' – whatever this means.

Sometimes, to clean up a picture I load it into Deluxe Paint III, and it saves at around 35,000 bytes, but takes about four times longer to reload into the Vidi program. Only by resaving the picture via the Vidi program is it restored to its original length and loading time of six seconds.

Is there any way of producing a DPaint file which is directly comparable with Vidi-Amiga?

**D Halliday
Wantage
Oxfordshire**

Well, with regard to crunching the image files, I tried LHARC and LHA, which are both shareware, and I had no trouble obtaining files of around 19K with either program on some original Rombo demo images. But of course you'll have to decrunch the files again first before you can use them, though if it's simply disk space you're trying to optimise then these programs should do you proud – though other picture files, in particular HAM, will hardly crunch at all, so watch how you go. I also understand that Nico Francois' Power Packer program can crunch pictures now, and decrunch them on the fly, but I can't swear to this as I've not used it. I think this might only apply

to the commercial version though.

Another idea you could try would be to make an animation in DPaint III using your various images. As you load each image in after the first one, remap its palette so that all the pictures have identical colour palettes – which won't cause any problems if all your pics are B&W and in the same resolution. Use the About requester to show how big the animation is becoming and save it to disk before it is too large to fit. I reckon you should easily get 20 lo-res B&W pictures on a disk this way, since they take up less space compressed together into an animation than they would have done individually. The drawback in this case is that you'll have to load the entire animation in order to extract a single frame.

I did some investigating into the various picture formats and I think that the difference is that the DPaint III file is in a compressed IFF format, whereas the Rombo file is uncompressed. This certainly makes sense in terms of file sizes, and I imagine that the Rombo software has to uncompress the file before it can display it, hence the mega slow-down. The uncompressed file storage that Vidi uses would also help to explain the rapid rates which can be achieved with lo-res sequence playback.

If you want to use your retouched

files with Vidi there appears to be no way other than the slow method which you've already discovered.

DEAD DIGI-VIEW?



Although I have just recently bought the Rombo Complete Colour Solution, I

also have an old NewTek Digi-View, which has been upgraded to version 4 Gold. The problem I have is that although the Digi-View worked a treat on my version 1.2 and 1.3 DOS A500s (and still does) it just doesn't want to know on my Amiga 500 Plus.

To make doubly sure I tried it on a friend's A500 Plus and it won't run on that either, not even the demo. Is this a hardware problem peculiar to the 'Plus' and is an upgrade available which is 'Plus' compatible? By the way, in Amiga Shopper 14 Paul Broadbent of Scunthorpe was wanting to add a digitiser to his Amiga but didn't want the plugging/unplugging headache caused by using the parallel port. Did you know that Rombo does an adaptor for its digitiser which plugs into the expansion slot of an A500? The only thing is – it costs around £60!

**Mike Tankard
Worsley
Manchester**

continued on page 36

JARGON BUSTING • JARGON BUSTING • JARGON BUSTING

Crunch – A method of compacting programs and data so that less storage space is used on a disk. When a crunched program is loaded into memory it automatically de-crunches itself into its full, functioning size.

EC5 – Enhanced Chip Set is the name given to the new versions of the Amiga's custom chips that handle graphics and sound.

Flicker fixer – A device that removes the flicker from the Amiga's interlace mode and the visible scan lines from the non-interlace mode.

Genlock – A way of slaving one video source (eg Amiga) to another (eg video tape) in order to synchronise their signals to allow stable wipes, mixes and other effects including overlay between the two sources.

HAM – Hold And Modify is an Amiga graphics mode that allows all 4096 colours to be displayed at once, with certain restrictions.

IFF – Interchange File Format is a means by which data from different graphics or sound programs are saved in a compatible way. It enables data to be exchanged between programs very easily.

Interlace – The method of displaying a TV picture where two screens of 312.5 lines each (or 1 field) are shown rapidly one after the other to give the impression of a single image, or frame, of 625 lines. A field lasts 1/50th second, a frame 1/25th, hence video is said to run at 25 frames per second.

RGB – Red Green Blue is a standard for video signals that provides better quality than composite or Radio Frequency signals.

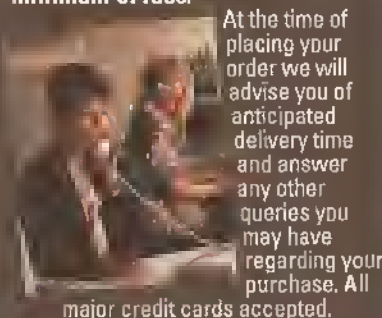
VGA – Video Graphics Array is a high resolution graphics system for the IBM PC, with up to 256 colours and a maximum resolution of 1024x768.



PHOENIX

SALES 0532-311932

Our friendly, highly trained sales team will ensure that your order is dealt with efficiently and with the minimum of fuss.

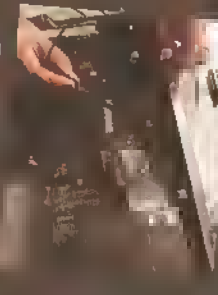


At the time of placing your order we will advise you of anticipated delivery time and answer any other queries you may have regarding your purchase. All major credit cards accepted.

TECHNICAL 0532-319061

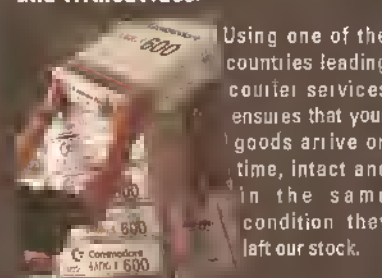
The Phoenix product helpline ensures that all our customers benefit from the highest level of after sales technical support.

We also offer advice to help you in choosing exactly the right product for your requirements thus eliminating the possibility of an unwanted or unnecessary purchase.



DISPATCH 0532-310796

Once you have made the decision to purchase from Phoenix your order will be dispatched promptly and without fuss.



Using one of the countries leading courier services ensures that your goods arrive on time, intact and in the same condition they left our stock.

A 600 RAM EXPANSION

Phoenix-the first company to market A500 Plus RAM Upgrades-now introduce the Phoenix PA 601

Features Include • Trapdoor installation Will not invalidate your warranty • Battery backed real time clock • Long life lithium cell • Enable/disable facility • Full installation instructions • Made in U.K. • Complete with famous Phoenix 2 year warranty.

Phoenix PA 601-populated 1Mb.....£44.99
Phoenix PA 601-unpopulated 0Mb.....£24.99
Phoenix A 600 ROM Shaver.....£29.99
Keyboard switchable!

AMIGA 600



With its modern compact semi portable wedge shape design, the new 600 is fully featured and can be purchased in the following configurations:

A 600 (incl. Deluxe Paint • software title).....£289.99
A 600 HD (incl. 20 Mb Hard Drive).....£444.99
A 600 2Mb (incl. above software).....£329.99
A 600 HD 2Mb£489.99

PHOENIX AMIGA Power Pack

When purchasing any Amiga you can also buy our unbelievable value PHOENIX POWER PACK, which includes over £100 of quality software and accessories. Probably the best bundle around, just look at what you get!

SOFTWARE
Man, Utd, Europa • Kick Off 2 • Captive
Rick Dangerous • Pro Tennis Tour 2
ACCESSORIES
Fully Microswitched Joystick
50 Capacity 3.5" Disk Box
8mm Mouse mat • 10 Phoenix-Branded
Disks with Labels.

Phoenix Power Pack.....£39.99

AMIGA 1500

2.04 Workbench Includes: Deluxe Paint 3, Platinum Works, Home Accounts, Toki, Puzznic, x Elf, Amiga Format Book and Joystick

AMIGA 1500.....**ONLY £539.99**

AMIGA 1500 + 1084 SDI

This **SPECIAL OFFER** combines both the A1500 (as shown above) and the legendary Commodore 1084 SDI Monitor.

AMIGA 1500+1084 SDI.....£729.99
Limited Stocks Only!

EMULATORS-A 500

GVP PC-286 16MHz.....£239.99
Vortex A Tonca Plus 286 (16MHz).....£214.99
KCS Powerboard (with DOS 4.01).....£199.99
KCS Powerboard only.....£184.99

DISK DRIVES

All drives feature super slim design, enable/disable switch, thru port and come with a 1 year replacement guarantee!

Phoenix Deluxe Drive.....£47.99
RocTec RocLite.....£54.99
Cumana CAX 354.....£52.99
Replacement A 500 Internal Drive.....£39.99
Disk head cleaner.....£3.99

MONITORS

PHILIPS 8833Mk II.....**ONLY £199.99**
Colour Stereo Monitor including 'F19 Flight Simulator' and 1 years on-site warranty.

COMMODORE 1085 SDI.....£216.99
COMMODORE 1084 SDI.....£199.99
All monitors are supplied with a **FREE** cable for connection to your Amiga.

MONITOR ACCESSORIES-

14" Dust covers.....£4.99
14" Tilt & Swivel stand.....£13.99
Anti-Glare filter screen.....£19.99
A4 Copy Holder.....£12.99

HARD DRIVES A500

GVP IMPACT SERIES II Hard Drives, the fastest Hard Drive/Controller for the Amiga. Features Game Switch, external SCSI port, FAASTRDM SCSI Driver, GVP's custom VLSI chip and internal RAM expansion up to 8 meg! Units use high specification fast-access DUALINTEC Hard Drives coming with 2 yr. guarantee.

A500-HD+ 52 Mb (Unpopulated).....£349.99
A500-HD+ 120 Mb (Unpopulated).....£464.99
A500-HD+ 240 Mb (Unpopulated).....£729.99

ROCTEC

PRICE CRASH!!!!

RocTec "Rochard" hard drives now at unbelievably low prices!!

ROCTEC 40 MB.....£259.99
ROCTEC 60 MB.....£294.99
ROCTEC 80 MB.....£329.99
ROCTEC 120 MB.....£364.99
Featuring Duentum/Cenner drives-very fast access times (19ms or better) • expand up to 8 Mb using 1 Mb Simms only • 1 year guarantee • slimline design ideally colour matched to the A500.

ROCTEC (controller Only).....£164.99
Very similar in style and appearance to the GVP HD+ but unpopulated and without a hard drive so you can fit your own. Please specify IDE or SCSI.

EXTRA MEMORY Only £27.99 when bought with drive!

HARD DRIVES 1500/2000

Series II Hard Disk Controller/RAM card.....£139.99
Series II 52 Mb Hard Disk and RAM card.....£279.99
Series II 120 Mb Hard Disk and RAM card.....£419.99
Series II 240 Mb Hard Disk and RAM card.....£649.99
EXTRA MEMORY Only £27.99 when bought with drive!

ACCELERATORS A500

GVP COMBINATION ACCELERATORS & HARD DRIVES-The ultimate expansion product for the Amiga 500!

A530 Combi 40MHz + 52Mb Hard Drive.....£694.99
A530 Combi 40MHz + 120Mb Hard Drive.....£829.99
A530 Combi 40MHz + 240Mb Hard Drive.....£1019.99
A530 68882 Co-Processor.....£229.99

ACCELERATORS 1500/2000

GVP G-Force 030-25MHz + 1Mb.....£545.99
GVP G-Force 030-40MHz + 4Mb.....£894.99
GVP G-Force 030-50MHz + 4Mb.....£1264.99

ACCELERATOR RAM Modules

1Mb Simm-32 Bit 60 Nanoseconds.....£65.99
4Mb Simm-32 Bit 60 Nanoseconds.....£182.99

PHOENIX A500 Plus 2 Meg RAM Upgrade Modules



A PHOENIX RAM module can expand your chip RAM up to 2 Mb by using the trapdoor expansion port. Extra RAM is necessary to unleash the incredible graphics capabilities of your Amiga. All our boards carry a full 2 year no quibble replacement guarantee. It's never been cheaper to upgrade!

1 Mb Fully populated RAM board....**NOW ONLY £34.99**
1 Mb unpopulated RAM board.....£16.99

PRINTERS

STAR-
LC20.....£134.99
LC200 Colour.....£195.99
LC24-20.....£199.99
LC24-200.....£224.99
LC24-200 Colour.....£279.99
XB24-200 Colour.....£379.99
SJ48 Bubblejet.....£229.99
Star printers come with one year warranty.

CITIZEN-
Swift 9 Colour.....**SPECIAL OFFER £179.99**
224 mono.....£214.99
224 Colour.....**NOW ONLY £229.99**
Swift 24e Colour.....**NOW ONLY £269.99**
Citizen printers come with 2 year warranty.

HEWLETT PACKARD-
Deskjet 500.....£339.99
Deskjet 500 Colour.....£559.99
HP printers come with 3 year warranty.

HP black ink cartridge.....£24.99
HP colour ink cartridge.....£29.99

PHOENIX PRINTER PACK-
Supplied with **ALL** printers containing 1.8 std. printer cable, printer ribbons/cartridge and 250 sheets of paper absolutely **FREE**.

PRINTER ACCESSORIES-

We have high quality dust covers for all the printers we sell, starting from £2.99. Call us for the best price on a cover for your printer.

Ink cartridges from.....£13.99
Mono ribbons from.....£3.50
Colour ribbons from.....£7.99
Printer stand.....£7.99

Many onto sheet feeders are available for printer. Call us for individual specifications and prices

CHIPS

AMIGA CUSTOM CHIPS

Kickstart 2.04 ROM.....£34.99
Kickstart 1.3 ROM.....£29.99
NEW Super Denise.....£34.99
Faster Agnus 8372A.....£34.99
CIA 8520A.....£9.99

MEMORY CHIPS

4 Mb x 9 (1-7e) Simm.....£199.99
1 Mb x 9 (1-80) Zip.....£34.99
1 Mb x 9 (1-80) Simm.....£29.99
256k x 4 (1-80) Zip.....£29.99
256k x 9 (1-80) Simm.....£12.99
1 Mb x 1 ORAM.....£3.99
256k x 4 ORAM.....£3.49
* This price is for 1 Mb of RAM

These chips cover practically every popular memory expansion of Hard Drive system on the market for the Amiga io. GVP, SUPRA, MICROBOTICS, COMMODORE

RING OUR TECHNICAL HELPLINE IF YOU NEED ADVICE

MEMORY EXPANSION

SUPRA 500RX offer the ultimate in Fast Ram expansion units.

8 Mb pop to 1 Mb*.....£99.99
8 Mb pop to 2 Mb*.....£124.99
8 Mb pop to 2 Mb.....£149.99
8 Mb pop to 4 Mb.....£209.99
8 Mb pop to 8 Mb.....£309.99
(* Uses 256x4 Zips)

VIDEO

Rombo's new Vidi Amiga 12 is the Scottish Company's direct replacement for the famous complete colour solution. Leaders video capture systems, they now introduce the world's first mass market colour digitiser for under £100.

VIOL-AMIGA 12.....ONLY £89.99
Outstanding features and plenty of VFM! (Value for money)-Highly Recommended.

TAKE 2.....£42.99
A must for computer artists and enthusiasts of a age. • Traditional animation • Story boards • Productions • Presentations • Home Line Tester • Cartoon Productions (both visual and sound).

ROCGEN Plus.....£129.99
Quality features and performance-Recommended

ROCKEY BY ROCTEC
The new chrome key unit - used in conjunction with a Genlock - allows you to superimpose live video over graphics or video-substitute a brightness portion of a video source with keyed image-Embed live video in graphics!

Phoenix Price.....£299.99

ACCESSORIES

Zy-Fi Stereo speakers.....£37.99
Superb sound and excellent dynamics. These two-way stereo speakers are an Amiga standard. Excellent companions on any gaming soiree!

Control Centre.....£34.99
Heavy duty construction, rubber edging, perfect colour match, makes an ideal workstation for the A500/A600

DATA SWITCHES - (25 pin D type)
2 way.....£15.99
1 way.....£17.99
1 way.....£19.99

STORAGE:
90 Capacity BAXX.....£11.99
150 Capacity PDSSO.....£16.99
Disk Box 10 Cap.....£1.99
Disk Box 25 Cap.....£2.99
Disk Box 50 Cap.....£4.99
Disk Box 100 Cap.....£6.99
Disk Box 120 Cap.....£7.99

"I would like to thank you for your fast and efficient service. I shall, without doubt, recommend you to all my colleagues"
P. Gallup-Ryde

TRAIL BLAZERS-WHAT'S NEW IN SEPTEMBER 1992!

In this month's new "TRAIL BLAZERS" section we spotlight some of the best new products and peripherals currently available for the Amiga.

CD ROM DRIVE-A570
Long awaited from Commodore, this essential add-on has finally arrived, suitable for A500/A500+, A570.
Phoenix price.....£339.99

PHENIX 1Mb A600 UPGRADE
Simply the Best!
£44.99

PRESS * NEW RANGE OF CITIZEN SWIFT 2 PRINTERS *
CALL SALES FOR PRICES * CALL TECHNICAL FOR

LEADS & CABLES

Ami-Midi 2m.....£3.99
Ami-Midi 3m.....£4.99
Ami-Midi 5m.....£5.99
Amiga-Scart.....£9.99
Amiga-RGB.....£9.99
Joystick ext.....£4.99
Joystick splitter.....£4.99
Serial/Modem.....£9.99
Printer 1.8m.....£5.99
Printer 2.0m HD.....£7.99
Call technical for complete listing

CALL OUR ORDER HOTLINE NOW!

Free Fast UK delivery
Next-day Courier only £4.50
Same-day despatch on Credit card orders/bankers draft/building society cheque/Postal orders
All prices include VAT

AMERICAN EXPRESS WELCOME



PHOENIX PRODUCTS

MOUSE/JOYSTICK SWITCH.....£13.99
Don't damage your Amiga's ports! This device saves wear and tear makes switchover FAST, and does NOT require power unlike many others

COMPUTER/VIDEO SCART SWITCH.....£19.99
Flip between Video/computer signals at the push of a button.

AMIGA MUSIC

Attention all you music lovers! Phoenix have put together an unbeatable music deal for you this summer.

MUSIC-X Jnr.....only £15.00
When purchasing either a Phoenix Stereo Sampler or Pro-Midi 2 Interface Please Note: this is a limited offer only while stocks last!

STEREO SAMPLER.....NOW ONLY £29.99
Combines ease of use with state of the art analogue to digital conversion technology. (inc. FREE sample editing software + audio lead)

PRO-MIDI 2 INTERFACE.....£24.99
This fully featured professional quality midi interface is very flexible giving semi-patch bay facilities. It has five ports in, out, thru and two switchable outthru. (inc. FREE midi lead)

GVP DIGITAL SOUND STUDIO.....£54.99
High quality sound sampler for all Amiga Computers
Amiga Music Made Easy-Only from Phoenix!

VIDEO STREAMER

For A500/500+ 1500/2000-3000 and CDTV
This unique back up and storage system is able to store/back-up data at the same rate as more expensive tape streamers. Using a standard VHS video cassette you can store up to a mindbending 800 Mb!
Phoenix price.....£199.99

A600 SMART CARDS

Utilise the advanced technology of the A600 Smart Card Expansion slot with these NEW RAM Expansion Cards direct from Phoenix. Available in 2 Mb & 4 Mb configurations.

PA 6020-2 Mb.....£119.99
PA 6040-4 Mb.....£149.99
BE FIRST WITH PHOENIX!

DISKS

Don't confuse these quality disks with others currently available. 3.5" 100% certified error free 70% clip. All disks include FREE high quality Phoenix labels.

10.....£4.99 200.....£72.99
25.....£12.99 500.....£174.99
50.....£22.99 750.....£259.99
100.....£39.99 1000.....£339.99

TDK Branded disks- High performance media from the experts-box 10 with labels.

10.....£5.99 100.....£52.99
50.....£26.99 500.....£249.99

1000 Phoenix Disk Labels.....£9.99

SOFTWARE

WORD PROCESSING / DTP

Kindwords 3.....NEW £36.99
Excellence V3.....£89.99
Interword.....£29.99
Pagastream V2.2.....£126.99
Pagesream Font pack 1.....£44.99
Page Setter 2.....£46.99
Pen Pal 1.4.....£57.99
Professional Page V2.X.....£179.99
Prowrite V3.X.....£57.99
Duckwrite.....£36.99
Scribble Platinum.....£35.99
Transwrite.....£29.99
Gold Disc Office.....£59.99
Wordworth.....£79.99
Professional Draw 3.....NEW £89.99
Xcad 2000.....£99.99
Xcad 3000.....£269.99
Hot Links.....£52.99
Platinum Works.....£64.99

UTILITIES

Cross Dos.....£22.99
Diskmaster 2.....£43.99
Dos 2 Dos.....£29.99
Opus Directory.....£29.99
Xcopy.....£36.99
Power Windows.....£49.99
Quarter Back.....£45.99
Quarter Back Tools Vs 5.....£49.99

DATABASE

Superbase Pro 4.....£164.99
Superbase Pers 2.....£61.99

VIDEO PRODUCTION/TITLING

Big Alternative Scroller.....£35.99
Broadcast Titrer 2.....£179.99
Font Pack 1 for Broadcast Titrer 2.....£88.99
Font Enhancer for Broadcast Titrer 2.....£88.99
Pro Video Post.....£168.99
TV Show Pro.....£51.99
TV Text Pro.....£84.99

FRACTAL AND SPECIAL FX

Alter Image F/X.....£97.99
Deluxe Paint 4.....£63.99
Deluxe Photo Lab.....£51.99
Deluxe Video 3.....£71.99
Image Finder.....£44.99
Pixmate.....£43.99
Scenery Animator.....£62.99
Visla.....£43.99
Pro Visla.....£71.99

ANIMATION

Imaga Master.....NEW £129.99
3-D Images.....NEW £36.99
Amos.....£36.99
Amos Compiler.....£21.99
Amos 3D.....£25.99
Easy Amos.....£22.99
Animagic.....£57.99
Deluxe Paint 4 Deluxe Video 3.....£71.99
Director V2.....£71.99
Imagine.....£199.99
Map master for Imagine.....£59.99
Presentation Master.....£169.99
Surface Master for Imagine.....£29.99
Sculpt Animate 4D.....£282.99
Showmaker.....£142.99
Video Director.....£107.99

PRESENTATION & SLIDE SHOW

Amigavision.....£88.99
Art Department Pro V.1.....£143.99
Art Department Pro Conv. Kit.....£57.99
Can Do It V.I.G.....£94.99
Hyper Book.....£44.99

ACCOUNTING

Maxiplan 4.....NEW £99.99
Arena Accounts.....£83.99
Home Accounts 2.....£39.99
System 3.....£43.99
Cashbook Comba.....£57.99

MICE & TRACKBALLS

NAKSHA Upgrade Mouse.....£24.99
Roctec Mouse.....£13.99
Squik Mouse.....£13.99
GOLDEN IMAGE
Crystal Trackball.....£37.99
Fanciful two colour shining trackball-who can resist?
Infrared-Cordless-Mouse...NEW £47.99
(Rechargeable)
Optical Pen Mouse.....NEW £POA
High Duality 8mm mouse Mats.....£3.99

SCANNERS

Powerful image processing tools for the office or the home environment.

PANDAAL Daatascan.....£109.99

PDWER-Features include: 100-400 dpi • 64-Greyscales Thruport to printer • FREE Editing software.

Power Scanner v2.0.....£94.99
Power Scanner Colour.....£234.99

GOLDEN IMAGE-Hand Scanner Series

Features: 400 dpi • 256-Greyscale • Touch up and Merge it software.

AlfaScan.....£124.99
AlfaScan Plus.....£149.99
AlfaScan T (inc OCR Software).....£249.99
AlfaScan DCR (inc OCR Software).....£279.99

EPSON GT-6000 FLAT BED FULL COLOUR SCANNER-Plug into Amiga parallel port, 600 d.p.i. resolution, up to 16 million colours
Phoenix Price.....£989.00

ASDG-SOFTWARE-Scanning software comes in two forms, integrated into art development as a new module or used as a stand-alone programme.
Phoenix Price.....£109.99

PHOENIX Kickstart ROM Sharer

Because some older games and business software will not run on the new Kickstart 2.04 RDM. PHOENIX have designed a sharer for both ROM chip sets. Switchable between 1.3 and 2.04 you can get all the benefits of the latest A500 Plus without the drawback of losing all your old software. Fits any Amiga 500/1500/2000.



*Kickstart ROM Sharer.....£24.99
*Kickstart Rev 3/5 RDM Sharer.....£27.99
*Keyboard Switchable ROM Sharer.....£34.99
Kickstart 1.3 ROM.....£29.99
Kickstart 2.04 ROM.....£34.99
(ROM Chips not included)

AMIGA RELEASE 2

Now Only..

£79.99



The popular upgrade kit for 1.2/1.3 owners from Commodore is in stock and selling fast!

PHOENIX - MAIL ORDER AT IT'S BEST!

Tel: 0532 311932

PHOENIX, UNIT 19, ARMLEY PARK COURT, STANNINGLEY ROAD, LEEDS LS12 2AE
Please make cheques payable to PHOENIX. Allow 5 working days for cheque clearance. Call our despatch line for details on our full range of delivery options both in the UK and overseas. BFPO welcome. OPENING TIMES: Mon-Sat 9.00am-6.00pm E&O.E


continued from page 33

Thanks for the extra Rombo info, Mike, let's hope it's of use to a few people out there.

Sorry to hear about the Digi-View trouble. Check the version number you are using with the "About" requester in the menu bar. If you have a version prior to version 4.02 you'll need to upgrade, as the older versions can't handle the extra requirements of WB2.04 correctly. I have 4.02 and it works just as well on my WB2.04 equipped Amiga 2000 as it did before I upgraded from 1.3. So now you know what the problem is - old software!

Try your original dealer, or a NewTek distributor such as HB Marketing (☎ 0753 686000) or Silica Systems (☎ 081 309 1111). Failing that, write to NewTek at 215 S.E. Eighth Street, Topeka, KS 66603 USA, fax (0101 for USA) 354 1584.


ENLIGHTENMENT NEEDED

 I have a Commodore A2300 genlock fitted internally to my Amiga 1500. When my Philips monitor is connected to the Amiga's RGB connector the output is a lot brighter than when it is connected to the RGB on the genlock. Is there a pot I can 'tweak' on the genlock to brighten up the video output, or will I just have to live with it?

JA Thompson
Worthing
West Sussex

This is apparently one of those things that you'll just have to live with. There are ways of sorting it out, but I'm told that more than a simple tweak is involved - like modifying some of the electronics. Why not try to persuade Commodore that you'd like a genlock which works better than the one you currently have?

CROSS-EYED

 I have a plain Amiga 500 running DDS 1.2, 1Mb of memory and a Philips 80 monitor, all about three years old. I use the Amiga largely for word-processing and my problem is eye strain. Is it possible to get a VGA screen or better for an A500? Would the latest ECS Denise chip reduce the flicker, and if so what else would I need to change?

Andro Linklater
Camden
London

The only way to get a 'VGA' screen, as you put it, is to use a deinterlacing device such as ICD's Flicker Free Video, which fits inside

your A500, and to use a suitable multisync monitor which is capable of running at line frequencies which include 31.2 kHz. You'll still need a multisync to use ECS Denise's Productivity mode, so, not much difference there.

There are some cheaper, DIY methods which you could also try. While they don't exactly replace the deinterlacing method, they may turn out to be useful and save you several hundred pounds.

• **Method 1:** Fiddle with the colours of your Amiga screen by using Preferences and/or the settings of your word processing software. Choose a combination which reduces the apparent flicker.


• **Method 2:** Run your Amiga at 60Hz frequency (the NTSC mode). There are a number of programs such as Hertz, 60Hz, and PowerUtil which will let you do this. While this method will certainly knock out the flicker, you may well have problems with some programs not being accessible beyond the bottom of the screen limit.

• **Method 3:** If your word processor allows it, switch to a non-interlaced screen. Although everything on the screen will be doubled in size, it should no longer flicker as badly.

• **Method 4:** Turn the brightness right up and wear sunglasses (at least that's what someone on CIX suggested recently!)

• **Method 5:** Combinations of Methods 1 to 4.

WHAT PICTURE FORMAT?

 I'm quite new to Amiga graphics, but I've been doing wedding videos for a couple of years. I purchased an Amiga 500 Plus so that I could add titles and other graphics to my productions. But I'm confused about what size of pictures I should be using with my VHS video set-up. I use Deluxe Paint III as my main program. My question is - what is the best image size to use when working with video, bearing in mind the need to use an interlaced format?

T Douglas
Airdrie
Strathclyde

Yes, the whole thing about Amiga graphics and television is that you have so many combinations of size and colour that I'm not surprised you are confused. When I started off with my Amiga 1000 in 1986 I was informed that I had to use an interlaced screen format because a television picture is interlaced.

But the truth is that any format of Amiga image can be used, from two colour low resolution to 4096 colour HAM interlaced. The problem

is that graphics recorded in non-interlace formats will cause marked instability during editing or genlocking because they are insufficiently synchronised, though for playback purposes they should normally work fine.

My favourite standard Amiga mode has usually been 16 colour high resolution, certainly where titles, general graphics and 2D animations are concerned. Admittedly this doesn't sound like a lot of colours, but careful choice and canny dithering can work wonders.

For 3D animation I will often use HAM interlaced format, simply because it provides a fairly realistic picture which can be played back directly from the computer.

Regarding size, with video it is best to use an overscan screen, which with Deluxe Paint III might be something like 352 x 580 in interlace format. This is simply because the image will then reach beyond the edges of the visible area of the TV screen, ensuring that any animations or pictures will fill the screen correctly.

Non-overscan images, eg 320 x 512 interlace, will exhibit a small gap all around when shown on a TV screen, which is OK if there is no movement and the background is all one colour, but which would otherwise be unacceptable.

Lastly, a short word about that old chestnut - memory. To get the best out of your Amiga I'd advise adding at least another 2Mb of memory. This will give you enough overhead to be able to work easily in 16 colour high resolution overscan or play back reasonably sized animations.

VIDEO DIRECTOR

 I have bought Gold Disk's Video Director and want to use my Sony EVC-3 Video8 VTR as a source deck but as the LANC socket is a 5-pin DIN and the Gold Disk interface terminates in a 2.5mm stereo jack plug, could you please suggest an adaptor or supply a wiring diagram to enable me to use Video Director in automatic mode.

NB: the Sony 5-pin to stereo line socket won't work as only 2 pins are connected.

Ian Pickering
Scarborough
N York

I'm sorry to say that I've drawn a blank on this problem so far. I can tell you what the DIN pins on your EVC-3 are, but not how to connect them to the Video Director's interface, since I couldn't find out how it is wired up. For the record, here are the DIN connections:

PIN 1 - Not connected
PIN 2 - Serial Data
PIN 3 - Ground
PIN 4 - Serial Clock
PIN 5 - DC +5V

I spoke to HB Marketing, which distributes Gold Disk products, and it said that it would be quite willing to help by talking to Gold Disk in the USA to try and get further information for you. So the best I can advise at this stage is to give HB Marketing a call on 0753 686000 and explain your problem. You might just get lucky!

GENLOCK GEN



I'm considering buying a genlock to use with my VHS home video

equipment so that I can add titles and graphics from my Amiga 500 to my home movies. I don't need anything too fancy, just something which gets the job done. As usual, money is a bit tight too, so perhaps you could give me a few pointers as to what I should be looking for?

James Martin
Leigh-on-Sea
Essex

Everybody and his dog seems to be producing Amiga genlocks nowadays, and if you read the adverts then each one is the best thing since sliced bread - which makes sense as there's no mileage in advertising anything to the contrary, is there? The problem is, how do you know what to buy if you don't know what you need?

Obviously one of the first considerations has to be cost, because however good the kit is, it's no good at all to you if you can't afford it! With prices ranging from less than a hundred pounds to up into the thousands you've got to draw the line somewhere.

A second consideration must be quality. Not just the quality of the genlock, but also the quality of the video signal being fed into it. It's all very well splashing out big bucks on a shiny, well-equipped broadcast quality unit, but what's the point when it will only ever get VHS put through it? Result - total waste of money.

Thirdly, you have to decide which features you might need. For instance, do you want to fade graphics up and down over video? Maybe you'd like to be able to mask out areas of the video, like a 'keyhole' effect. You might want to be able to adjust the colour or brightness of the incoming video, or you may need RGB pass-through to feed your Amiga monitor. Some people will need S-VHS compatibility, others just composite input.

So make up a list of what you think you require. Then start reading magazines – reviews, adverts and news pages. Check out prices, and note that some dealers charge less than others.


Put a short-list together and see if you can get further information from either the dealer or the manufacturer. Check up on things such as guarantees while you're about it. Don't forget to check readers ads for second-hand kit either – there are often bargains to be had!

Since I don't know what your exact specifications or budget are I can't recommend one genlock out of many, but ones which you should be considering if money is *really* tight include both RocGen genlocks, the MiniGen and the Rendale 8802, all of which will work satisfactorily with your Amiga 500 and VHS.

There are lots more genlocks to choose from if you have more pennies – G2 Systems, AST, Magni, Electrocraft, Videocomp and Electronic Design all make a good range of units.

Check out the adverts in magazines such as *Amiga Shopper* and *What Video* for suppliers.

1901 TROUBLE

 Is there any way which I can internally alter my Commodore 1901 monitor so that the existing digital RGB input can be used with my Amiga 500 to allow the monitor to display analogue RGB – ie display all 4096 colours instead of the 16 I am currently limited to?

I recall reading an advertisement by Trilogic for the above conversion, but since this was at the time of the C128, for which the monitor was intended, I am quite prepared to do the job myself.

Ben Anderson
Huddersfield
W Yorks

Well, I called Trilogic (0274 691115) and the people there informed me that they are still doing the modifications – which involve adding some circuitry, a SCART socket and so on – to bring the 1901 up to the output of a 1084 or Philips RGB monitor.

If you send Trilogic the monitor it will do the mods, supply a new SCART to Amiga cable and return the monitor to you within 48 hours. The cost will be around £50, but call first to confirm. Hang on, here's a thought... if you have a car you could probably take the monitor to Trilogic yourself as it is just a short trip up the M62 from you – and save a few bob too, maybe.

CUT IT OUT!



Could you tell me what I need to do so that I can edit my video tapes into a more presentable form.

At the moment I've got lots of tapes with pictures that I want to keep, but there's also loads of rubbish I don't want in there. I'd also like to use my Amiga to add titles and details of dates and places so that I can keep track of everything. Any help would be appreciated.

Gill Morrison
Peckham
London

If you're not too worried about the absolute timing of everything, just so long as you get the bits you want stored away more efficiently, then the simplest way is to just copy from one VTR to another, using pause and record to paste together the sections you want. To do this just join two videos together by connecting the audio and video outputs from one machine (which will become the 'source') to the audio and video inputs of the second machine (the 'recorder').

If you can, try to avoid using the aerial-type RF connectors, because while this might be easier, you'll get less "generation loss" by using the dedicated audio and video inputs and outputs. If you're using a genlock to add graphics you won't be able to use these connectors anyway.

The connectors could well be different on each VTR, so you should check beforehand that you have all the correct leads for the job. If possible, have a TV or monitor for each VTR, as this will make life easier for you.

If you use a genlock, make sure that it is connected between the video out of the source and the video in of the recorder and that it is also connected to your Amiga's RGB port.

When you're done connecting, it's time to start editing. The first thing to do is to record some black video and an identification header at the start of the tape. Not only will this help you to quickly identify the tape, it will also help protect it, as it's the start of a tape which takes the worst beating and hence gets the most wear and damage. If you are using a modulator, disconnect your record VTR's video input and connect it to the modulator's video output instead. Load a paint or titling program such as *Deluxe Paint III* or *Home Titrer* and produce a black screen. Record about a minute of this on a new, good quality video tape. Stop or pause the recorder,

prepare your first titles (eg *My First Tape*, August 1992) and then record say 30 seconds of this. If you stopped the tape it is best to wind back very briefly so that there will be no visible join. Use Pause wherever possible, but remember that a VTR will generally stop after a certain time in pause mode. To avoid this, some forward planning is recommended. Prepare your graphics in advance and know where the parts of the tapes you want to transfer are (use tape counters, make notes etc).

Reconnect the source VTR if you were using a modulator and copy the first section of video across. Pause the recorder when the section is finished, find the next one on the source tape and release pause. Keep repeating this operation until you have what you want. Add titles as needed. And finally, voilà, an edited tape.

As you'll gather from the above procedure, this is a rather rough and ready way of editing, but it proves that it is possible to get results out of some relatively simple equipment.

There are many other ways to skin this particular cat (mine were out of the room when I wrote that bit!). One would be to use a program like Gold Disk's *Video Director* (as long as you had compatible VTRs or camcorders), another would be to use a dedicated edit system, either Amiga-based such as Syntronix' *EditMan* or EMR's *VideoPilot* (again with the right VTRs), or a fully-blown dedicated video editing suite, which you could probably find for hire locally, usually at a daily or hourly rate. It all depends on your particular needs.

DISNEY TIME



I want to use my Amiga to do 2D and 3D animation. I already have a hard

drive (A590) and 3Mb of memory on my Amiga 500 Plus. Can you suggest some 3D programs which might be suitable for beginners, and any other equipment which might be useful to add to my present set-up.

J Andrews
Stoke

With such a range of 3D programs now available for the Amiga it's hard to know where to start. I always thought that *Sculpt 3D/4D* programs were fairly easy to learn, likewise *Real 3D*.

Videoscape 3D is too much of a headache to use to really justify recommending it nowadays, though it was good in its day. Personally, I favour *Imagine* because I've followed its evolution since its early days as *Silver* and I have spent thousands of hours using it, but I wouldn't normally recommend it for a novice

unless they are really determined to learn how to use it. Another program which I've only heard about recently is *Expert-4D Jr* which, according to the recent reviews, sounds pretty interesting – especially at around £50.

There are also a few PD 3D programs, such as *RayDance* and *DBW Render*, but unless you're totally skint I wouldn't recommend them simply because they use scripts rather than graphic interfaces, and this can be a real pain, even for experts!

I'd love to recommend *Lightwave*, the excellent 3D package bundled with NewTek's *Video Toaster*, but unfortunately you have to have the *Toaster* to run it, and as an NTSC device it's not that much use to most of us in Europe.

There are other programs, including *Reflections*, *Caligari*, *3D Professional* and *Design 3D* which all have endearing features. However they also have some handicaps which bias me against them – for example *Reflections* is a German program (with no English manual) and *Caligari* just causes me frustration even though the results can be excellent.

So, my own recommendation would be *Imagine 2* (if you can take the learning curve), then *Real 3D*, then *Sculpt 4D*. All of these programs have their idiosyncracies and specialities, and *Imagine* and *Real 3D* definitely outperform *Sculpt* nowadays.

Remember though that 3D rendering is *extremely* time consuming and the addition of a turbo card would help greatly. You will also run into memory constraints from time to time, especially if you are using texture or brush mapping techniques, so extra memory should be considered.

If you wish to use 24-bit rendering (which *Imagine* and *Real 3D* are both capable of) then you'll need a display card such as *AVideo 24*, which can be installed inside your Amiga 500, to output the images on an RGB monitor in their full glory, though to animate them you'll either have to record them frame by frame to a suitable video deck or convert them to HAM or other IFF format which is capable of being shown as a standard Amiga display and then animate the frames together. Programs such as *Art Department Professional* and *Imagemaster* can help you to achieve this.

Finally, if you just opt for making IFF animations with your 3D software, you might like to get hold of *View 3.0*, a PD IFF viewer which can also play animations, or *ShowAnim*, which is an IFF anim player.

AMIGADOS...

In a stupor over startup? Feel like putting the boot into boot? Mark Smiddy provides the solutions so you can be sure of Shell

AMIGADOS DEBUGGING CHART



CRACKED IT!

RESIDENT CODE



Is it possible to make programs such as **FORMAT** resident for speed? And, most importantly, is it safe to do?

Paul Rickard
Lytham St Annes, Lancs

Most software can be made resident – even quite large applications – provided the code is pure. Generally speaking you will only make frequently used software – such as AmigaDOS commands – resident in RAM so they are readily available. You can force-load a command to the resident list using the PURE switch like this:

```
1>RESIDENT SYS: ;
System/FORMAT PURE
```

(This example only applies to versions before 1.3 by the way. In later releases most of the system software is pure. The command format remains the same no matter which version you are using).

Next, you must determine whether or not the code is re-entrant and re-executable.

Re-entrant code is vital if you intend multi-tasking since several processes will be sharing the code at the same time. If you just want the command available, this is not important. However, the command must be re-executable, or it will be completely useless – and this is the first test.

1. Force load the program as described above and execute it. If the program uses intuition, make sure you use all the options at least once.

2. Exit and reload the program. If it crashes or if any of the settings remain from the last invocation, the program is not re-executable and must not be made resident.

3. If the program passes the first test, open a second Shell and execute it from there at the same time. This will force EXEC to use the same copy of the code twice and if it is not re-executable, it will crash in spectacular fashion. If everything goes all right you can assume the program is safe to make resident, if not you can still make it resident provided you can be sure no more than one copy of it will be running at any one time.

PATTERN MATCHING



How can I use pattern matching to select a directory?

Peter Dennis
South London

In AmigaDOS 1.3 you can use the command extension, SPAT to perform single pattern matching. It works like this:

```
1>SPAT CD DEVS:K#?
```

From AmigaDOS 2 onwards, CD has pattern matching built in – it even supports multiple patterns too. Here are a couple of examples:

```
1>CD DEVS:K#?
1>CD :De#?/K#?
```

SEQUENCE WON'T WORK



The eclectic Startup-sequence (Amiga Shopper 16) does not work on my 2.04

machine – why?

Dave Stebbings
Bromley, Kent

This problem only came to light when the software was released on an audience with many different machine configurations. There are actually several combinations of the Kickstart 1.3/2 ROMs and Workbench software and this is the problem. Here are the two lines causing the trouble:

```
WHICH >RAM:version ECHO
SEARCH RAM:version "RESIDENT"
IF WARN
etc.
```

Line 1 asks the machine where the ECHO command is located and this relies on the WHICH command returning a string:

```
C: ECHO – for AmigaDOS 1.3
RESIDENT ECHO – for AmigaDOS 2.0
```

This is the problem: WHICH does not return RESIDENT on AmigaDOS 2, but INTERNAL. This program was taken from a working startup but the wrong version of WHICH was being used. Also, some 1.3 machines have a problem with the RAM disk – since this code is only for hard disk machines, it was decided to use T instead.

The first three lines of this code can be fixed in one of two ways:

```
WHICH >SYS:T/version ECHO
SEARCH SYS:T/version ;
"RESIDENT"
IF WARN
etc.
```

or

```
WHICH >SYS:T/version ECHO
SEARCH SYS:T/version "C:"
IF NOT WARN
etc.
```

A better solution will be provided in next month's AmigaDOS column.

COPY CONUNDRUM



The COPY command in MS-DOS can refer to the current directory – how can this be done in AmigaDOS?

Darren Tate
Stockton on Tees, Cleveland

MS-DOS uses a period internally to refer to the current directory, but AmigaDOS has no direct equivalent. However, you can supply a null argument ("") to fox AmigaDOS into using the current directory. For example:

```
1>COPY "" TO RAM: ; copy ;
from current directory
1>COPY RAM: TO "" ; ;
copy to current directory
```

You must supply the pair of quotes to avoid confusing the AmigaDOS command line parser which in this case is looking for two required arguments.

ON THE MOVE



How can I move several files from one directory to another without using COPY and DELETE?

and DELETE?

Carolyn Knight
Chiswell Green, Herts

AmigaDOS supplies the RENAME command to do this. Although RENAME is usually used to change file names it can also move things around between directories. For instance to move a file from DEVS: to a directory called

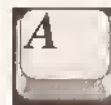
"SYS:Text/Archive"

```
1>RENAME DEVS:MYFILE ;
SYS:Text/archive
```

Unfortunately, RENAME does not support pattern matching but you can get around this using a special command extension script supplied from AmigaDOS 1.3. It's called DPAT and here's an example:

```
1>DPAT RENAME ;
:devices/archive/#? to DEVS:
```

MORE HELP



Can I prevent MORE from clearing the console window?

John Connor
Adlington, Lancs

Yes. When you use more as a direct command it shares the current console window with you. However, if you launch it as a sub-process it will open its own private window. For instance:

```
1>RUN MORE S:Startup-sequence
```

PERSISTENT WINDOWS



When I start a program from the Startup-sequence using RUN, the Initial CLI window does not close unless I quit the program. How can I get around this?

CLI window does not close unless I quit the program. How can I get around this?

Sid Day
Southend, Argyll

This is quite a common problem and one which affects the main Shell window too.

JARGON BUSTING • JARGON BUSTING • JARGON BUSTING

AmigaDOS – The part of the Amiga's operating system that helps take care of the general running of the machine. AmigaDOS concerns itself with device-handling: control of the keyboard, basic screen output, disk drives, printers and so on.

Directory – A method of storing files on a disk in a hierarchy. A directory is a sub-section of a disk which may contain files and/or further directories. In this way similar files can be grouped together.

Multi-tasking – The ability of a computer to run more than one program at once. In practice only one program is run at a time, with others waiting for their turn. The part of the Amiga's operating system called Exec handles the switching between programs, which is done so quickly that they all appear to be running simultaneously.

RAD – An area of memory that can be used just as if it were a disk drive. The advantage of RAD is that access to it is much faster than to a floppy or even a hard disk. Unlike an ordinary RAM disk, RAD retains its contents after a reset.

Script – A grouping of AmigaDOS commands held in a text file that may be treated as a single command.

Startup-sequence – A program that is executed every time the Amiga is switched on or reset.

When you start a program using RUN, AmigaDOS creates a 'child process' which is hooked to the main Shell window.

In all practical terms, RUN is identical to NEWSHELL - only it does not open a new console window. The application started shares its console input and output (display) with the original Shell.

Even applications which do not use the Shell windows at all will often grab the console handles - this is a feature of C compilers.

In order to allow the console window to close you must give the child process some dummy handles to cling on to - that's what the NIL:

device is for. Typically, you launch a background process like this:

```
RUN <NIL: >NIL: SomeProgram
```

If you do this much from the Shell proper (ie, not in scripts) a shorter solution is to define an alias to do the hard work for you:

```
ALIAS RunBack RUN <NIL: >NIL:
```

The alias is used like this - here we start ED in the background editing the Shell-startup file:

```
1>Runback ED S:Shell-Startup
```

AN EMERGENCY START-UP

An emergency start-up is one of the most useful things you can do if you intend fiddling around with the main (or, 1.3 only, secondary) startup-sequences. It couldn't be much simpler and here's how...

Open a Shell and enter:

```
1>COPY S:Startup-sequence to S:EmStart
```

If you are using Workbench 1.3, you will also need to do this:

```
1>COPY S:StartupII to S:Startup2
```

Edit EmStart using:

```
1>ED S:EmStart
```

and include the following instruction at the first line.

```
FAILAT 21
```

Workbench 2 users should skip to the next section now.

Find a line which reads:

```
RUN EXECUTE S:StartupII
```

and change it to read:

```
RUN EXECUTE S:Startup2
```

If something goes wrong during the startup, all you have to do is reset the machine and hold down the "Ctrl" and "D" keys together. This will stop the startup-sequence and allow you to enter:

```
1>EXECUTE S:EmStart
```

This will start the machine normally using the default Startup-sequence.

USERS WITH WORKBENCH 2 ONLY

After you finish editing EmStart, enter the following:

```
1>PROTECT S:EmStart +S
```

When you re-boot the machine hold down both mouse buttons until the special startup screen appears. Select the advanced options with the mouse and click the button at the bottom of the screen to disable the startup-sequence. Now return to the main screen and select DFO: (DHO: if you're booting a hard disk). When the Shell window appears type:

```
1>EmStart
```

This will boot the machine from the emergency startup script. The !Prefs daemon will present a requester moaning about open windows - this is quite normal and nothing to worry about.

ICON CHANGE



How can I change the RAM disk's icon on Workbench?

Stephen McNabb
Kilmarnock, Ayrshire

First off, you have to create a new dot-info file with the icon type "disk". The simplest way to do this is copy one from another disk, so let's assume the disk in DFO: has an attractive icon:

```
COPY DFO:disk.info RAM:
```

Nothing will appear to happen to RAM's icon at this point. If you have Workbench 2, reset the Workbench using the selection on the tools menu. Workbench 1.3 users can get the same effect using:

```
1>LOADWB
```

and you will notice RAM's icon change to the new design.

To make this more permanent, you must copy the icon to your boot disk - but with a different name otherwise it will overwrite the existing disk.info. Do it like this:

```
1>COPY RAM:Disk.Info to J  
SYS:Disk.Inf
```

Now add the following line to your Startup-sequence (User-startup for AmigaDOS 2):

```
1>COPY SYS:Disk.Inf to J  
RAM:Disk.Info
```

RADICAL SOLUTION



Why can't I mount RAD:? How can I change the size of RAD:?

Phil Moore
Redcar, Cleveland

There are several reasons this might happen, but since RAD requires a contiguous chunk of memory, it is most likely your machine cannot fulfil RAD's requirement. This is particularly true on A500 Plus machines which although fitted with 1Mb memory, come with a default RAD disk size of 880K. You should fix this by reducing the size of the RAD disk or fit more RAM.

If you are sure you have enough RAM, it may be your machine's memory is fragmented. This can be fixed by re-setting the machine.

RAD is a device and like all manually mounted Amiga devices it has an entry in the "mountlist". The mountlist is a text file located in the devs directory of your boot disk so you can view it like this:

```
1>ED DEVS:Mountlist
```

Each entry starts with the name of the device and ends with a "hash" or "gate" symbol - #. RAD looks like this:

```
RAD:  
Device = ramdrive.device  
Unit = 0  
Flags = 0  
Surfaces = 2  
BlocksPerTrack = 2  
Reserved = 2  
Interleave = 0  
LowCyl = 0 ; HighCyl = 21  
Buffers = 5  
BufMemType = 1  
#
```

(AmigaDOS 2 users will note the item "HighCyl" is set to 79 by default.) The entry we are interested in is, HighCyl and applying the formula:

$$\text{Size} = (\text{HighCyl} + 1) * 11$$

gives the size of RAD in K. For instance, substituting the default values gives:

$$\begin{aligned} \text{Size} &= (21 + 1) * 11 = 242\text{K} \quad \text{J} \\ &\text{(AmigaDOS 1.3)} \\ \text{Size} &= (79 + 1) * 11 = 880\text{K} \quad \text{J} \\ &\text{(AmigaDOS 2.04)} \end{aligned}$$

Also, the formula:

$$\text{HiCyl} = (\text{Size in K}/11) - 1$$

can be used to determine the value of HiCyl given a required size of RAD. If you have AmigaDOS 1.3.2 or higher you can calculate this approximately with EVAL, viz:

```
EVAL (500/11) - 1
```

This example gives HiCyl a value of 44 and a RAD disk of 495K.

RESIZING RAD



Is it possible to have a small RAD sometimes and a large one for other occasions - for instance, when I'm programming?

Paul Stubbs
St Agnes, Cornwall

It is practical and quite sensible to have more than one RAD device available at your command. To do this you should create an entry in the mountlist for each RAD with the size you want; and provided the device name is unique, AmigaDOS will recognise the one you want. The following mountlist entries would suffice (the second can also be booted from AmigaDOS 2):

```
BABYRAD:  
Device = ramdrive.device  
Unit = 0  
Flags = 0
```



```
Surfaces = 2
BlocksPerTrack = 2
Reserved = 2
Interleave = 0
LowCyl = 0 ; HighCyl = 10 ; ↵
121K RAD disk
Buffers = 5
BufMemType = 1
#
```

```
DISKRD:
Device = ramdrive.device
BootPri = 6
Unit = 0
Flags = 0
Surfaces = 2
BlocksPerTrack = 2
Reserved = 2
Interleave = 0
LowCyl = 0 ; HighCyl = 79 ; ↵
880K RAD disk
Buffers = 5
BufMemType = 1
#
```

A PROVISION OF RADS



Can I have more than one RAD disk available at once?

Peter Workman
Newton Abbot, Devon

This is possible in AmigaDOS 2, although generally speaking it is not a good idea. When you have created two different RAO device entries in the mountlist, you can mount them as normal, viz:

```
1>MOUNT RAD1:
1>MOUNT BIGRAD:
```

ALIAS AUGMENTATION



Can ALIASed commands take parameters?

Mike Meakin
Hazel Grove, Lancs

Yes – but only one as a general rule. You can insert the string “[]” at any point in the command line and the first argument you supply will be inserted at that point. For instance, the alias:

```
ALIAS OF FORMAT DRIVE DF[ ]: ↵
NAME “Empty” QUICK
```

can be used like this:

```
1>OF 0
```

to format any disk in drive 0. However, you can add any extra arguments as you normally would, like this:

```
1>OF 0 NOICONS
```

WHAT A BIND



Can you tell me what the difference is between a late-binding and

non-binding assignment in AmigaDOS 2?

Terry Hope
Portsmouth, Hants

These two options were added to the ASSIGN command to give it more flexibility. First of all consider what assign does:

```
ASSIGN Logical_Name: ↵
AmigaDOS_Directory
```

for this to work, the directory path to which the name is being assigned must be present and available on a currently mounted volume. This enables ASSIGN to locate the directory and get a “lock” on it. If the path cannot be found, AmigaDOS will ask for a volume if one has been specified – and that is the crux of the problem. Consider this:

```
1>ASSIGN LIBS: ↵
Extra_Libraries:Libs
```

In this case you are attempting to assign the libraries directory to a volume called “extra_libraries” which would not be a problem, provided the volume is available (in some disk drive) when the command is executed. Imagine doing that in a Startup-sequence!

What is needed is a way of creating an assignment which is not called until something requires it – that’s what the late and non-binding assignments do.

Late-binding assignments work in much the same way as the original ASSIGN command, but wait quietly in the background until the assignment is called.

At this point AmigaDOS tries to locate the directory path and obtain a lock on it. Once achieved, the lock remains – the path is attached to that disk – until something changes it. AmigaDOS uses this feature to “bind” ENVARC:

Non-binding assignments create temporary locks. When the logical device is accessed, AmigaDOS will access any path which happens to fit the bill. Although it will still ask for a disk, any volume with the required name and directory path will suffice. This option is probably the more useful of the two because (for example) it will allow some software to access many different disks of bitmapped fonts. This could be achieved thus:

```
1>ASSIGN FONTS: DF1:Fonts ↵
PATH
```

PROCESS OR MULTITASK



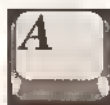
What is the difference between a process and a task?

Gary Busey
Hartlepool, Cleveland

Everything and nothing depending on how you view them. Tasks are handled by Exec (part of Kickstart) and processes are handled by AmigaDOS.

In order to support multi-tasking, AmigaDOS processes operate on the back of Exec tasks. This is analogous to a car body and the chassis that supports it. The AmigaDOS process (the body) is built on top of the engine, gearbox and running gear (the task). As in a car, the body is little use without the chassis assembly.

PROCESS LIMIT



Why can I only have 20 processes running at once?

Ted Danson
Crewa, Cheshire

This only affects early Kickstarts up to 1.3 and is basically just the way AmigaDOS worked.

Each AmigaDOS process (Shell or CLI) was allocated a “slot” in the process table. The designers fixed the size of the table to 20 and that’s the end of the story. In AmigaDOS 2 processes are added to a linked list – the size of which is determined by available memory. In theory therefore, you could have hundreds of processes running at once.

A SKIP AND A JUMP



Why does SKIP backwards fail when it has to jump over an EXECUTE instruction?

Gary Smith
Watford

For every file it runs, EXECUTE creates a temporary parsed file in the T: assignment: “Command:XX-YY” where “YY” is the calling process number and XX is the nesting level. The nesting level is not used, and consequently the old parsed file is overwritten by a new one.

The solution is to run the second script as a child process which will ensure the name conflict does not arise. For example, the script:

```
1. LAB Start
2. EXECUTE An-Other
3. SKIP Start BACK
```

will create Command-00-01 in T: as it starts. When line 2 is reached, EXECUTE creates a copy of “An-Other” as T:Command-00-01 thus overwriting the previous file so when Step 3 is reached, the label does not exist.

Here is one possible solution:

```
1. LAB Start
2. ECHO >T:Process “<$$>”
3. RUN EXECUTE An-Other
```

```
4. WAIT >NIL: 5 MINS
5. SKIP Start BACK
```

Step 2 creates a temporary variable containing the process number. Remember, unless this is a startup script, it is not possible to guarantee which process is executing the program.

Step 4 ensures the script does not continue until “An-Other” has completed.

The actual amount of delay is arbitrary, but it must be sufficient to prevent the first script from continuing before the second one completes. The last line of “An-Other” (or the last instruction executed before it completes) should read like this:

```
BREAK <T:Process >NIL: C ?
```

This instruction “breaks” the wait state entered at line 4 of the previous script.

DOLLAR DOLDRUMS



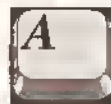
What does <\$\$> mean in script files?

Stuart Anderson
Ambleside, Cumbria

The angle bracket characters (set by default) always enclose a script variable. Most of these are defined by the command line argument, but this one is generated by AmigaDOS. It inserts the process number of the current process (shell).

Some programmers change the bracket and even the dollar characters too – you’ll see these changes in the first few lines of the script as dot commands. Typically, brackets are changed to braces “{...}”.

POOR EVALUATION



Why does EVAL return the wrong result sometimes?

William Hill
Gatashaad

Eval is “bugged” in the early releases and requires a very strict command line format to work. For instance:

```
1>EVAL 1+2
```

will not work, whereas:

```
1>EVAL 1 + 2
```

would. It is not strictly correct to say EVAL is bugged, the Interpreter just works that way and the only fix is to use a later (1.3.2) version. However, the later EVAL has problems of its own. The improved command line parsing includes full operator grouping according to mathematical rules.

"FUTUREWORLD'S AUTUMN SALE NOW ON

AMIGA 600 CARTOON CLASSICS PACK ONLY

£329.95

- * AMIGA A600 (Inc DPAINT III & GAME)
Latest model with onsite maintenance
- * CARTOON CLASSICS SOFTWARE
Bart Simpson, Lemmings, Caplain Planet
- * ASTRA TEN GAMES PACK
Datastorm, Dungeon Quest, E Motion, Grand Monster Slam, Powerplay, RVF Honda, Shufflepack Calé, Soccer, Tower of Babel

*Exclusive to
RRP £299.99

Futureworld*

- * 2 MAGNUM MICROSWITCH JOYSTICKS RRP £24.95
- * High quality & Durable
- * QUALITY MOUSEPAD RRP £6.99
- * TAILOR MADE DUSTCOVER RRP £6.99
- * WICKED 40 GAME PACK RRP £24.95

TOTAL RRP £678.

But yours for an unbelievable
A600 HD Pack (Inc 20Mb hard disk) £499.95

SALE NOW ON! SALE NOW ON! SALE NOW ON! SALE NOW ON! SALE NOW ON!

GAMESMASTER PACK

- AS500 1.3 VERSION COMPUTER RRP £349.95
- 512K RAM EXPANSION RRP £29.95
- Gives your Amiga the essential 1Meg memory RRP £229.78
- ASTRA TEN GAMES PACK RRP £24.95
- (See A600 pack for details)
- WICKED 50 GAME PACK RRP £29.98
- 50 great games to get you going!
- 2 MAGNUM MICROSWITCH JOYSTICKS RRP £6.99
- High quality and Durable
- QUALITY MOUSEPAD RRP £6.99
- TAILOR MADE DUSTCOVER
- PLUS • PD DISK PACK • FEATURING WORDPROCESSOR • SPREADSHEET • DATABASE • VIRUS KILLER • BACK UP UTILITY
- TOTAL RRP £678.59
- But yours for unbelievable £329.95

SPORTSTARS PACK

- AMIGA 1.3 VERSION COMPUTER RRP £349.95
- Only version to run all Amiga software
- 512K RAM EXPANSION RRP £29.95
- Gives your Amiga the essential 1Meg memory
- KICK OFF + EXTRA TIME RRP £9.99
- The original and greatest football game
- PRO TENNIS TOUR RRP £9.99
- Stunning gameplay and effects
- GFL GOLF RRP £14.99
- Play a round in the comfort of home.
- WICKED 50 GAMES PACK RRP £24.95
- 2 MAGNUM MICROSWITCH JOYSTICKS RRP £29.98
- QUALITY MOUSEPAD RRP £6.99
- TAILOR MADE DUSTCOVER RRP £6.99
- PLUS • PD DISK PACK CONTAINING: WORDPROCESSOR • SPREADSHEET • DATABASE • VIRUS KILLER • BACKUP UTILITY
- TOTAL RRP £483.78
- But yours for unbelievable £329.95

PROFESSIONAL USERS PACK

- AMIGA 1.3 VERSION COMPUTER RRP £349.95
- Only model to run all software
- 512K RAM EXPANSION RRP £29.95
- Gives your Amiga the essential 1Mb memory
- PUBLISHERS CHOICE PACK: Incorporating: RRP £49.95
- KINDWORDS V2.0 WORDPROCESSOR
- Simple and easy to use
- PAGESSETTER V2.0 RRP £69.99
- Effective Desk Top Publisher
- 10 BLANK DISKS RRP £9.99
- QUALITY MOUSEPAD RRP £6.99
- TAILOR MADE DUSTCOVER RRP £6.99
- PLUS • PD DISK PACK CONTAINING WORDPROCESSOR • SPREADSHEET • DATABASE • VIRUS KILLER • BACK UP UTILITY
- TOTAL RRP £523.85
- But yours for unbelievable £329.95

MONITORS / TVs

All our monitors/TVs come with the following value pack worth over £90 COMPLETELY FREE!
Value pack comprises:

- GFA BASIC RRP £49.95
- The most comprehensive programming language
- 10 DS/DD DISKS RRP £9.99
- 10 CAPACITY STORAGE BOX RRP £4.99
- SCART LEAD TO YOUR COMPUTER RRP £9.99
- CLIP-IT PAPER HOLDER RRP £8.99
- MOUSE HOUSE RRP £6.99
- PLUS • PD DISK PACK CONTAINING Wordprocessor • Spreadsheet • Database • Virus Killer • Backup Utility

GOLDSTAR 14" TV/MONITOR

Complete with remote control and sleep timer

Incredible value for money

TOTAL RRP WITH VALUE PACK £325.79

PHILLIPS 3332 15" FST TV/MONITOR

High quality FST TV/Monitor with dedicated monitor output

infra red remote controlling a host of features

Complete with 2 year guarantee

TOTAL RRP WITH VALUE PACK £330.75

COMMODORE 1084S STEREO COLOUR MONITOR

Dedicated Commodore monitor

Colour co-ordinated to complement your Amiga

TOTAL RRP WITH VALUE PACK £390.75

PHILLIPS 2331 15" FST TV/MONITOR

Same specification as 3332 but with Teletext

Full range 3 speaker sound output

Incredible value for money

TOTAL RRP WITH VALUE PACK £360.75

PHILIPS 8833/II STEREO MONITOR

Simply the most popular monitor around

* 12 month on site service warranty

TOTAL RRP WITH VALUE PACK £390.75

★ AMAZING SALE PRICE ★
WHILE STOCKS LAST

But yours for an unbelievable

£199.95

But yours for an unbelievable

£239.95

But yours for an unbelievable

£269.95

£229.95

£209.95

AMIGA CDTV SPECIAL OFFER

Save £200 and trade in your Amiga A500 for Cammadare's latest Multimedia pack:

- CDTV Player ● Keyboard
- Floppy Disk Drive ● Mouse

+ Free GFA Basic (£79.99)

OFFER RUNS UNTIL THE END OF SEPTEMBER. CALL NOW FOR DETAILS

AMIGA 1500 CARTOON CLASSICS SUPERPACK

- NEW AMIGA 1500 featuring Workbench/Kickstart 2, The Works, D Paint III, Home accs etc RRP £699.95
- ASTRA TEN GAME PACK 10 individually packed games (see A500 Gamesmaster pack for details) RRP £229.95
- GFA BASIC Essential for basic programming RRP £49.99
- CARTOON CLASSICS SOFTWARE
- Bart Simpson Vs Space Mutants • Lemmings • RRP £79.97
- Captain Planet RRP £15.98
- 2 FIGHTER JOYSTICKS RRP £6.99
- QUALITY MOUSEPAD

NB: This machine requires a TV/Modulator (£24.95) if it is to be used with a television

TOTAL RRP £1082.62

But yours for an unbelievable
£599.95

MEMORY DRIVES & SCANNERS

- 512K RAM EXPANSION WITHOUT CLOCK £19.95 WITH CLOCK £24.95
- 1.5 MEG EXPANSION (Not Plus compatible) £79.95
- 1 MEG EXPANSION (Gives your A500 plus a massive 2MB) £39.95
- 1 MEG EXPANSION WITH THRU-PORT £49.95
- NEW 8 MEG RAM BOARDS FROM POWER Complete with Thru-Port Populated board
- with 0Meg RAM £99 • 2 Meg RAM £129 • 4 Meg RAM £189.95 • 8 Meg RAM £299.95
- DIRECT A500 REPLACEMENT DRIVE with instructions £44.95
- POWER PC880E Robust slim drive with onti-click £49.95
- CUMANA CAX 354 SLIMLINE DRIVE £54.95
- POWER PC 880B with Blitz/Virus hardware £69.95
- POWER PC880B+ X-COPY PROFESSIONAL £99.95
- DUAL POWER PC880B complete with Power supply £124.95
- GVP 52 MEG HARD DRIVE WITH RAM EXPANDABLE TO 8MB
- 0 Meg RAM £379.95 • 2 Meg RAM £429.95 • 4 Meg RAM £499.95 • 8 Meg RAM £679.95
- GVP 105 MEG HARD DRIVE WITH RAM EXPANDABLE TO 8MB
- 0 Meg RAM £579.95 • 2 Meg RAM £629.95 • 4 Meg RAM £729.95 • 8 Meg RAM £899.95
- POWER SCANNER WITH VERSION 2.0 SOFTWARE £99.95
- UPGRADE KIT FOR NON POWER SCANNER UNITS
- Complete with hardware interface and new version 2.0 Software £49.95

Future World

computers

ALL PRICES INCLUDE VAT & COURIER DELIVERY

★ SALE ★ STAR PRINTERS ★ SALE ★

All our Star Printers now come with the following value pack worth £34.95 COMPLETELY FREE.
QUALITY COMPUTER CABLE RRP £9.99
UNIVERSAL PRINTER STAND RRP £9.99
200 SHEETS CONTINUOUS PAPER RRP £4.99
TAILOR MADE DUST COVER RRP £9.99
16 NIGHTS HOLIDAY ACCOMMODATION
PLUS • PD DISK PACK CONTAINING
 Wordprocessor • Spreadsheet • Database •
 Virus Killer • Backup Utility

STAR LC20 MONO PRINTER
 9 Pin Dot Matrix 180/45 cps
 TOTAL RRP with value pack £268.01
But yours for an unbelievable £139.95

STAR LC200 COLOUR PRINTER
 9 Pin colour 185/45 cps
 TOTAL RRP with value pack £339.95
But yours for an unbelievable £199.95

STAR LC24-200 MONO PRINTER
 24 Pin mono printer 220/55cps
 TOTAL RRP with value pack £386.29
But yours for an unbelievable £239.95

STAR LC24-200 COLOUR PRINTER
 24 Pin colour printer 220/55cps
 TOTAL RRP with value pack £445.04
But yours for an unbelievable £289.95

STAR SJ48 INKJET PRINTER
 High speed/quality mono printer, 100cps (10)
 TOTAL RRP with value pack £379.95
But yours for an unbelievable £234.95

INSTORE SUPERSAVER DAY SATURDAY 12 SEPTEMBER

TOP 10 BARGAINS

Amiga A500 (1.3) £259.95
 Amiga A600 £269.95
 Cartoon Classics Amiga (2.04) £324.95
 Star LC20 £119.95
 Star LC200 £169.95
 Star LC24/200 mono £199.95
 Star LC24/200 Colour £249.95
 Philips 8833 II £179.95
 Commodore 1084S £214.95
 3 budget games with all fully priced software

Wordworth **£69.95**

This special sale stock is strictly limited, so please arrive early to avoid disappointment

SUPER ABC PERIPHERAL PACKS

PACK B
 1/2 MEG UPGRADE BOARD RRP £29.95
 2 FIGHTER JOYSTICKS RRP £15.98
 40 CAPACITY LOCKABLE DISK BDX RRP £9.99
 10 DS/DD 3.5" DISKS RRP £9.99
 TOTAL RRP £65.91
SUPER VALUE PACK PRICE £34.95

PACK A
 QUALITY REPLACEMENT MOUSE RRP £19.99
 SOLID PERSPEX DUST COVER RRP £12.99
 QUALITY SEMI-SOFT MOUSEMAT RRP £7.99
 TOTAL RRP £40.97
SUPER VALUE PACK PRICE £24.95

PACK C
 1 MEG EXPANSION BOARD RRP £59.95
 40 CAPACITY LOCKABLE DISK BDX RRP £9.99
 10 DS/DD 3.5" DISKS RRP £9.99
 3.5" DISK DRIVE CLEANING KIT RRP £7.99
 TOTAL RRP £87.92
SUPER VALUE PACK PRICE £44.95

PROFESSIONAL AMIGA REPAIRS

"Simply The Best" Commodore authorised repair centre

FREE COLLECTION & DELIVERY BY COURIER Make one simple phone call and leave the rest to us!

GUARANTEED 7 DAY TURN AROUND We guarantee to return your computer WITHIN 7 days of collection

FULL OVERHAUL INCLUDING OVER 50 DIAGNOSTIC CHECKS Your Amiga will look as good as new

3 MONTH COMPREHENSIVE GUARANTEE Our engineers work to the highest standard

ALL INCLUSIVE PRICE We won't con you with hidden extras

FREE 50 GAMES SOFTWARE PACK

For a limited offer we will give you a 50 games pack completely free!

ALL FOR THE INCREDIBLE PRICE OF £59.95

NS Personal callers in to one of our stores may deduct £10 from the above price. We reserve the right to refuse computers that have been tampered with or are beyond economical repair. In this instance a nominal £10 charge will be made to cover carriage costs.

EXTEND YOUR WARRANTY TO A TOTAL OF 1 YEAR FOR ONLY AN ADDITIONAL £20.00

ORDERING MADE EASY



BY PHONE

Simply call our Head Office quoting your Access/Visa number on **0234 218060 (5 lines)**



BY CALLING PERSONALLY

Simply call in to your nearest FutureWorld store where our fully trained personnel will be more than happy to deal with your requirements.



BY POST

Make cheques, Building Society drafts or Postal Orders payable to
FUTUREWORLD COMPUTERS LTD
 UNITS 25-27 SERGEANTS WAY
 ELMS INDUSTRIAL ESTATE BEOFORD MK41 0EH

Please write the cheque guarantee card number on the reverse of cheque to ensure same day clearance. Cheques without a card number subject to 10 days clearance.



REMEMBER ALL PRICES ARE INCLUSIVE OF VAT & COURIER DELIVERY (UK Mainland only) SATURDAY DELIVERY £10.00.

FINANCE

Finance available to suit your specific needs. Written details on request. Instant credit is available in all FutureWorld stores

PREMIER GOLD CARD

- 7 day money back guarantee on goods purchased if not completely satisfied (subject to goods being returned in mint condition)
- 30 day exchange for new policy should a fault occur
- 1 year guarantee giving free collection and delivery service should a fault occur
- Exclusive Premier Gold Card with Personal Membership Number entitling you to special offers

- All this for only £19.95 per item purchased

1 YEAR GUARANTEE

For the whole guarantee period, warranty service will be completely free of charge

TECHNICAL SUPPORT/ON SITE ENGINEERS

Being authorised service centres for AMSTRAD, COMMODORE & STAR, we are

equipped to deal with the majority of queries. Lines open 3.00pm to 5.30pm

FULLY COMPUTERISED ORDERING SYSTEM

This enables our telesales staff to provide up-to-the-minute stock information coupled with efficient dispatch

FULL TESTING PROCEDURE

All computer hardware is tested prior to dispatch maintaining our motto;

*Simply the
BEST*

All goods subject to availability
 All prices correct at time of
 going to press

E & OE

YOUR NEAREST *FutureWorld* STORE



LUTON

3 Arndale Centre Luton Telephone 0582 482680

BASILDON MEGASTORE

12/13 South Wolk Basildon Telephone 0268 270013

BEDFORD MEGASTORE

1 The Howard Centre Bedford Telephone 0234 212460

NORTHAMPTON

1-7 College Street Northampton Telephone 0604 33996

WELWYN GARDEN CITY

16 Church Road Welwyn Gdn City Telephone 0707 390029



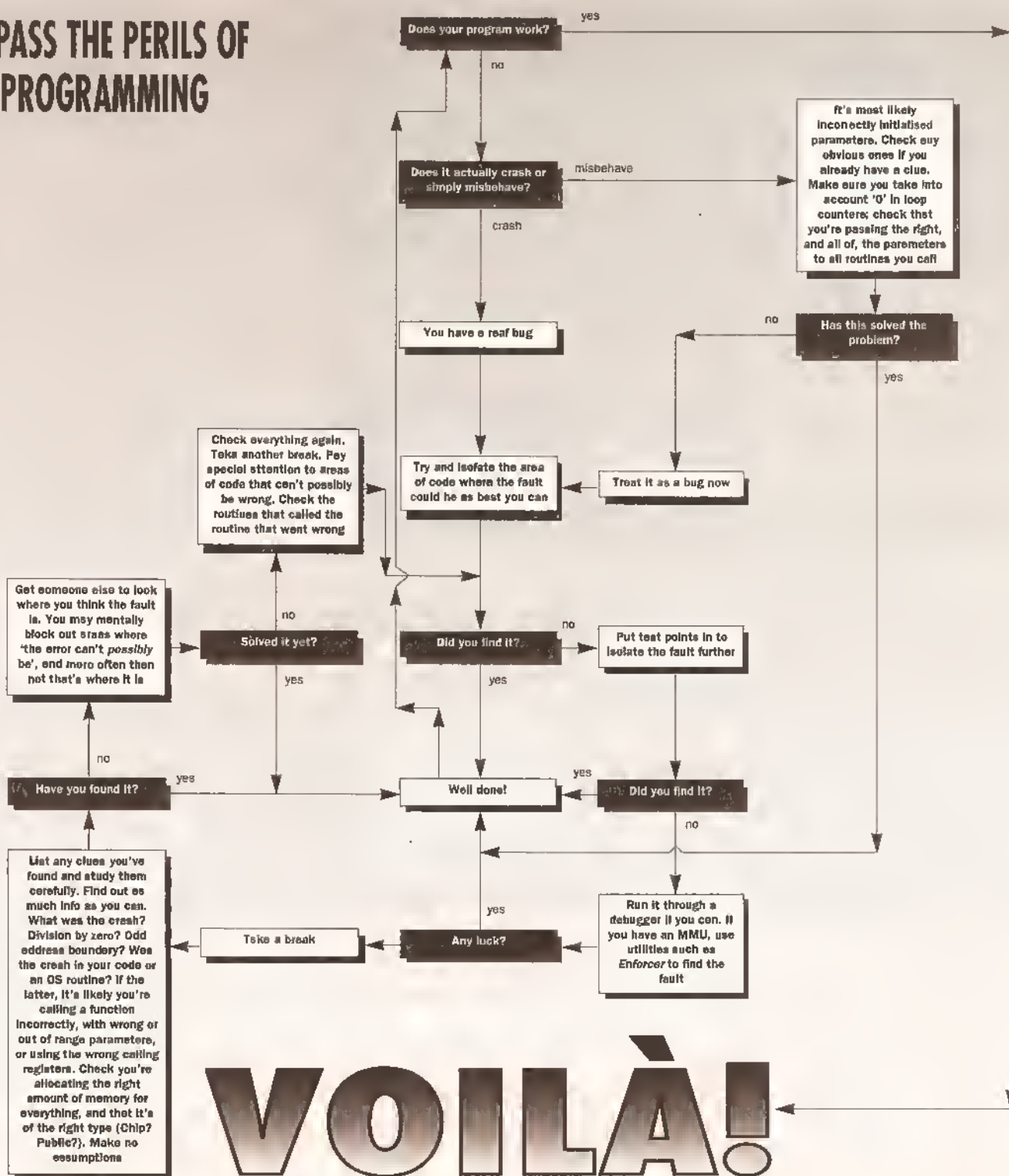
ST. ALBANS & WEMBLEY OPENING SOON CALL FOR DETAILS



PROGRAMMING

Stare in vain no longer at line after line of code; Toby Simpson is here to let you into a few trade secrets and lighten your burden...

BYPASS THE PERILS OF PROGRAMMING



SCREEN TAKEOVER BID



I have written a program that takes over the screen display by writing to the hardware registers in the Amiga. It is written in Assembly language using DevPac. The problem is that there is a bug in the program that I cannot find. Since I have done a Forbid to disable multi-tasking, and taken over the Amiga hardware, I cannot use a standard debugger. Have you got any suggestions as to how I can find the bug?

J Saunders
Norwich, Norfolk

There are a number of solutions to this. Firstly, you must ask yourself if taking over the machine like this is actually necessary. Unless you're writing an action packed scrolling arcade game, there isn't really much excuse for hitting the hardware like this these days – and even in the case of the game, the case for

The only thing more dangerous than a programmer with a screwdriver is a user with an idea.

sticking to the operating system is mounting all of the time. If, however, you have to program in this way then you ought to bear a number of things in mind anyway:

Should Commodore upgrade the Amiga's custom chip hardware in the near future, you might find your program breaking. I would strongly recommend that you add these few lines in before you write to any of the custom chip registers:

```
LoadView(NULL); /* Load a
NULL view to stop the system
copper list */
WaitTOF();
WaitTOF(); /* Wait for a
couple of screen blanks to
allow the system enough time
to shut down its copper list
*/
```

Now write to the registers. All three of those functions are found in the Graphics Library. They are quite straightforward to call in assembly language. What that code fragment actually does is disable the Amiga's normal intuition display and wait for a couple of frames to ensure that its copper list is "clear". It's the polite way of saying "Tidy up, I'm taking the hardware." The OS is clever enough to then disable any weird and wonderful hardware functions that you may not know about. This is by no stretch of the imagination an ideal solution: It's a workaround. The best way of doing a custom display is by using your own "View". If you're

interested in learning about a "View", then consult the Amiga Libraries book, Edition 3.

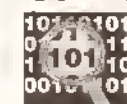
Back to your original problem. The key to success in any major debugging session is to narrow down where it can be!

In the last major program I wrote, the main code segment was just over 60,000 lines long (all assembly language). Finding a strange bug in that was like looking for a needle in a haystack to be honest. The best way to hunt the little things down is to try and eliminate as much of the program as you can. Disable every routine you can to try and work out where the bug can be.

When you have established the basic area the fault is in, add little bits of code to indicate how far the program got before it crashed. In OS friendly programs, simply printing "I got to the XXX routine" on the console window is a good way of going about this. For your particular problem, I would suggest flashing the screen various colours. That way, if it crashes shortly after making the screen bright yellow, you would know exactly how far it got. Then it should be quite straight forward for you to find the actual fault.

If you have an MMU, however, then there are some other options available to you. With an MMU you can run some very interesting tools indeed. *Enforcer* is worth a special mention. With *Enforcer* running and a terminal attached to your serial port, should your program do anything naughty, such as write to illegal memory areas, then a complete register dump goes over to the terminal together with the reason the fault happened. This process of *Enforcer* dumping its information across is called an "Enforcer Hit".

DOUBLE BUFFERING



I have written a game in assembly language, but I have screen flicker. I wait for a vertical blanking gap, and then clear the screen with the blitter before blitting all of my game sprites to the screen. When I am using more than a few BOBs, I get serious flicker. I don't know how to solve this. I have heard "double buffering" might help me, could you explain what this is?

Mark Ball
Crawley, W. Sussex

Double buffering is a very simple concept employed in most computer games, especially on the Amiga, to ensure you don't get screen flicker. The reason your screen is flickering is because you are unable to draw all of your sprites fast enough to fit in the vertical blanking gap, and the custom chips are drawing the next

JARGON BUSTING • JARGON BUSTING • JARGON BUSTING

Beta-testing – This is an important phase of development which takes place after the program has been mostly finished. The aim of Beta-testing is to try and remove all of the bugs in order to increase program stability. Beta-testing can take months on large projects, and can involve many people.

Breaking – A general term for a program not functioning as it should do. For example, "My word processor worked fine on the A500, but broke on the A3000."

Bug – An error in your program. They come in all different shapes and sizes, from the little well hidden, almost invisible ones that you have to employ the most incredible debugging tools to get out to the blindingly obvious ones that you can't see, but everyone else can!

Compiler – Being lazy souls and wanting to make their jobs easier, programmers started to group collections of machine code instructions together which performed a particular job, and give each of them a name. When they had written their programs using these names, they ran them through a program called a "Compiler" which converted each of the "higher level" instructions to the various machine code instructions which could then be ran directly.

Crash – When your program falls badly. A typical crash on the Amiga might involve a Guru meditation, forcing a complete reset of the Amiga.

Enforcer – A Commodore-produced development tool which traps all of the naughty things your program might do, and pumps information about the slip-ups over the serial port for you to examine.

High Level Language – As a general rule (very general!) the higher the level the language is, the easier it is to read, program and learn. A good example of a high level language is Basic. Slightly lower than Basic might sit C, and somewhere at the bottom of the scale sit Assembly Language and Machine Code. The lower you get, the closer you are to the binary operations of the computer itself. In the case of Assembly language, each instruction you type is one machine code operation. This one-to-one is as low as you can get. As you get higher up the scale, your one command might result in many machine code operations being produced.

Interpreter and "stand alone programs" – An interpreted language is one in which, instead of pre-assembling or compiling a program to run directly, the program compiles as it runs. This makes for much slower programs that are not "stand alone." What this means is that as the program is compiled and executed as it goes along, the interpreter always has to be there. In the case of Assembler, or compiled languages, the compiler/assembler only needs to be around at the time you compile/assemble the program, and not when you run it.

Low level language and machine code – The lowest level of programming language on the Amiga is machine code. This involves entering numeric values directly into the Amiga's memory. It is time consuming, and was the way people programmed computers twenty years ago. Programmers replaced the numeric values with small words that described what the number did, for example, "add" instead of the binary number 10110101. They then wrote using these words, and used a program called an "Assembler" to translate the words to the appropriate binary numbers. This process of using mnemonics to represent binary instructions is called "Assembly Language Programming" and is the lowest form of programming language still in general usage.

MMU – Memory Management Unit. One of the handy toys that your 68020, '030 or '040 card might have. If it does have one, you can use a number of very nice debugging tools indeed. Amongst its other features, an MMU enables you to trap illegal memory accesses and jump in to see what happened. This is one of the things that *Enforcer* can do.

Stability – A term, when used in reference to programs, referring to how "crash proof" it is.

frame whilst you are still blitting to it. Double buffering, in its simplest forms, involves you having two screens, a hidden one, and a visible one. Basically, you draw on the hidden one, and when it's fully drawn, simply swap the two banks, then draw on the new hidden screen. This way you can take as long as you like to draw your new frame without worrying about flicker. Watch out, however that your program doesn't run "as fast as it can": install some code to make sure that if it's running on a very fast Amiga that it doesn't swap the banks too quickly. Try playing *Interceptor* on a 25Mhz 68030 and you will see what I mean - it's like trying to land the plane on a postage stamp!

GET BY WITH A BOOK



I have had an Amiga for three years now. About a year ago, I decided to learn

Assembly Language. Here I am, a year on after reading several books which frankly tell you very little about how to manipulate the language. I know most of the instructions but I do not know how to put them together without the machine crashing on me. What I mean to ask is: do you know of anyone or anywhere that runs courses in 68000 programming or a book that actually tells me how to manipulate the language rather than just telling me the addressing modes.

Richard Hobbs
E Molesey, Surrey

This is a stunningly common problem. Most of the "Learn Assembly Language on the Amiga"

books aren't actually much good at teaching someone to program 68000 - they concentrate too much on the Amiga, and not enough on the concepts of Machine Code. What you need is a good book on Machine Code programming, going through the concepts of Assembly Language, how it fits together, how it all works and then teaches you to program 68000 properly. I would strongly recommend the book *Programming the 68000*, published by SyBex. It's a wonderful publication that starts with "What is a Program?" and works up from there. Armed with this book, together with the official Amiga Libraries, Devices and AutoDocs books you are ready to learn assembly language for sure this time!

ALL AT C ON COMPILERS



I own a 1Mb Amiga A500, and as a hobby I am learning to program C using the

Dice C compiler. However, I am interested in buying a commercial C compiler, either Aztec or Lattice. I have noticed that the Aztec compiler comes in two packages, professional and development, but that you seldom see any adverts for it (the professional package being my preferred choice based on price.) Most shops advertise Lattice and I've taken this to mean that it is superior. As a hobbyist, I have to strike a balance between functionality/speed and cost-effectiveness! Could you give me a brief summary of the two compilers to help me choose which one to buy?

Paul Williams
Longevens, Gloucester

Firstly, development in C without a hard disk is a nightmare. If not nearly impossible. I would recommend that anyone thinking of taking up C programming (or any programming, to be honest) considers a hard disk and at least 1.5Mb of RAM. For SAS/Lattice C 5.10b, for example, it is recommended at the start of the manual that you have 2.5Mb of RAM,

An Amiga programmer's life starts getting easier at '030, but really begins at '040

and at least 20Mb of hard disk space. If you want to learn more about SAS/Lattice C, contact HiSoft on 0525 718181. If you're after a professional package, you're best to save for the SAS/Lattice compiler, as it is a fast efficient, flexible and powerful application.

CRASHES WITH C



I have written a program in C on my A3000 (OS 2.04) which does not work on my friend's A500 (OS 1.3). I can't find out why and I'm at my wits end. It keeps crashing on the A500 with a Guru meditation.

Tony Joseph
Harlow, Essex

I wish I knew what those Guru Meditation numbers were! But at a guess, I'd say they were 00000003.xxxxxxxx or 80000003.xxxxxxxx - Odd Address boundary. There are a number of things which could cause a program that works fine on an A3000 to break badly on another Amiga. Firstly, I shall discuss the Odd Address boundary one. The 68030 in your A3000 is a clever beast, and is capable of writing information to odd addresses, which the lesser 68000 chip - as found in the A500 is not. It's likely that you are compiling your program to be optimised especially for the 68030, which is producing code that is incompatible with the A500.

Another possible fault is that you are making use of functions that are present in Workbench and Kickstart 2, but not in 1.3. You must be careful about this sort of thing. If you are going to use routines that are not present in older operating systems, you must check the version numbers of libraries that you open and ensure that they are the right ones.

The only other suggestion as to what this fault could be is that you might be running very short, or indeed out of memory, or the stack is too small. C programs are notorious for using up large amounts of stack, especially if you are using recursive programming in any way (such as some of the more clever

and faster sorting routines). Try typing "stack 32768" from the Shell before running your program and see if that makes any difference. As far as running out of memory goes, make sure that you are assuming nothing. Always check to see if the memory you have allocated has actually been given to you, otherwise you might suddenly find yourself using a pointer of zero as a base to your allocated memory - which will give unpredictable results to say the least.

LOST IN CODE



I have been programming for several years now, I started with Basic,

then AMOS and now I am learning to program C. However, I have a problem! I am working on a big program under Kickstart 2.04, and I am having severe difficulties keeping track of it. As it gets larger it seems to get harder to find bugs, and I am getting lost in it. Could you perhaps do an article on designing programs? How would you recommend I solve my current problem?

Justin Chapman
Eltham, London

You're suffering from badly structured programming. This nasty disease causes your program to appear much larger and more complex than it actually is, and helps you to introduce bugs without noticing. Eventually you end up with a massive program that lists like spaghetti and is impossible to update and maintain. Sooner or later, you have to scrap it and start again.

Laying down a sensible structure to your program before you start is perhaps one of the most time-saving things you can do for later trouble shooting. Actually design your program before starting at the keyboard. Try to lay it out into separate modules which you can write and test independently of each other. This will help you to trace faults later on, and will make your program much more readable and easier for you to understand. Document each of your routines carefully, state what it does, what its inputs and outputs are, and, if it's in assembly language, which registers it requires. You may be able to remember what a routine does for a while, but should you come back to it six months later to upgrade it, unless you've put sufficient comments in you're going to find it very hard indeed to recall how it works and what it does.

Use sensible variable names, such as "player_name" rather than "pn", this helps to make your code

THE JOY OF PROGRAMMING

Programming can be one of the most rewarding, and yet at the same time, frustrating activities you can do on a computer. Finally getting a routine working that you have been trying to debug for hours, or even days, can be most satisfying! Programming, of course, is also known as the easiest method to shorten your lifespan. Its the classic stress producer. Your program doesn't work: drink more coffee, try again, repeat till you're so fed up with it that unless you leave the machine quickly you're going to punch its lights out. Drink more coffee. Of course, the problem with coffee is that the more you drink, the shorter your temper becomes and the harder it is to debug your program anyway! A good stiff drink won't help matters much either.

So how do you cope with the mounting pressure, tension and general strain of programming, produce some good programs, and not have a nervous breakdown? Well, with a few simple guidelines, common sense and some programming and debugging tips you can't go too far wrong. At the very least you'll increase your life expectancy.

It's hard to produce large programs that are bug free. Some people have said that it is actually impossible - a worrying thing when you consider that the entire American Star Wars anti-missile technology relied on hundreds and thousands of lines of totally untested code. It's quite easy, however, to produce programs that are easy to debug when they do go wrong. In the following few pages, I shall answer some programming problems people have had, and give some general advice on trouble shooting, and see if we can't save some heartache!

easier to follow. The same applies to routine names – "show_menu()" rather than "sm()", for example. In the "good old days" of computers, you had so little memory that you would have to write bad code, short variable names, short routine names, lots of statements on one line etc. This is no longer the case; you can definitely spare the few bytes it takes to make your program easier to follow and read, and it's certainly worth every second of extra typing time that might be involved.

RULES FOR CODING

A Could you give me some general advice on Assembly language programming? What are some of the most common mistakes that machine code programmers make?

**B Norton
Tilbrook
Milton Keynes**

That's a tall order. There are literally millions of things that you can do wrong. Most can be avoided by sticking to the Amiga programming rules, structuring and documenting your program well, and using sensible label and routine names. There are, however, some really common mistakes that people make, and if you do run into problems, perhaps you might check this sort of thing first. These apply to most programming languages on the Amiga as well as assembly language, C especially:

- Storing a data value in a memory location that is too small. This is a good one, because it's a pain to find in most cases. It can stem, for example, from storing a long word into a word memory location, writing into the following word unintentionally and corrupting something. This is also easy to foul up in languages other than 68000. In C, for example, you might have an area of memory for a string and simply write too many characters out, corrupting memory that does not belong to you and thus producing unpredictable results. The most common cause of this in C is forgetting that at the end of a string you have a NULL to terminate it, which is an extra character.
- Using addressing modes or features that are not downwardly compatible. The 68020 has some pretty neat bit field extraction instructions which the 68000 does not have, for example. If you are relying on features of a higher CPU, then make sure your program quits gracefully if those features are not there with a suitable error message. ("I need a 68030 to run").

- Assumptions. This is definitely a popular one! It can affect most areas of Amiga programming. *Don't assume anything.* You may not necessarily get that 24 bytes of memory you asked for, the window you just tried to open might not open and so forth. If you need Kickstart 2 to run, check that you have it.

- Passing the wrong values to OS routines. This is an easy one to do: accidentally passing the wrong register to an operating system function call. Check that you are

There are two approaches to software design: one is to make it so simple that there are obviously no deficiencies; the other way is to make it so complicated that there are no obvious deficiencies

supplying all the parameters the function requires, and in the formats that it wants.

- Forgetting the upper bits in register, or forgetting to initialise registers and variables correctly. Look at this small code fragment:

```
move.b (a0)+,d0
mulu #64,d0
move.l 0(a1,d0.w),d0
rts
```

This routine could go seriously wrong. If d0 already contained a value greater than a byte, then the multiply and move instructions that follow it will fetch the wrong results. The programmer has failed to make sure that d0 is zero before starting, or to put it another way d0 was not correctly initialised. If your routine is going to use any variables at all, make sure that they are correctly set up.

- Falling to test programs properly. Test everything. You can't be too thorough. Check to see what happens to your program if you ran it when there was no RAM left, or with strange unpredictable parameters. This phase of seeing if your program works is called "Beta-Testing." Get some friends together also to have a play, and they will find faults that you might not be able to.
- Not having the right books. If you can afford the official Amiga Reference books, get them, especially the Libraries, Autodocs and Devices books.

WHICH LANGUAGE?

I am considering learning to program, and I don't know which language to learn. I am intending on writing some utilities. I have narrowed my

choice down to C, Assembler or AMOS.

Anon

The language you should pick depends on so many things...

- What are you intending on doing with it?

If you're about to write a *RoboCad* style game for your Amiga, then C is definitely out of the running. You will need the compactness, the control and speed of Assembly language programming. At a pinch you could pick AMOS, a very powerful BASIC style language especially designed for graphic and sound based programs (such as demos, games, music and effects programs). Alternatively, if you are going to be writing large applications around the Amiga's operating system, then C would be your best bet. The OS itself is written mostly in C, and it is designed to be called and used from C. It's still possible to write such applications in Assembly Language, and lots of people still do.

- Your budget.

This is important. If you are going to program C seriously, then you will eventually need to buy a commercial compiler, such as the excellent *SAS/Lattice C*. This costs a large amount of money, but is certainly worth its weight in gold. In the meanwhile, there are some perfectly good PD C compilers now for the Amiga, such as Matt Dillon's *DICE*. There are also PD assemblers

around too, but again, if you are considering programming it seriously, HiSoft's *DevPac 3* is essential. With AMOS you have no options, you have to buy the full package.

- Your interests and skills.

Assembly language programs are by nature longer and less readable than most other computer languages. Other than programming in HEX or binary directly, (Machine code) Assembly language is about as low level as you can get. AMOS would be the easiest to learn; C is quite easy to use, but hard to learn well; followed by Assembly language. If you're interested in how a computer works, and what goes on inside it, then the latter, 68000, would be a good choice. If you simply want to produce good Amiga applications that work well on all Amigas, then your best bet is C.

AMOS is an excellent hobbyist's language, and great fun to learn and program (especially for beginners), but it is hard to produce good stand-alone professional packages with.

- Compiled or interpreted language?

If you need speed, or the ability to generate stand-alone programs you will need a compiled language rather than an interpreted language such as Basic. AMOS is interpreted, but with an add-on you can compile your programs into machine code.

Borrow some books on C and Assembler and have AMOS demonstrated to you so that you are better equipped to make a decision.

SERIOUS DEVELOPMENT

In this special trouble shooting guide, I have made many references to programs such as *Enforcer*. If you want to get hold of *Enforcer* and many, many other invaluable debugging tools straight from Commodore, write to:

Commodore Developer Support
Commodore Business Machines UK
The Switchback
Gardner Road
Maldenhead
Berks SL6 7XA

Enclose a cheque for £25, and ask for the "Native Developers Upgrade Kit." In return, Commodore will send you the very latest includes and autodocs (library routine information) and a directory full of handy tools and utilities which will help you to debug and test your programs more productively.

If you are seriously into developing on the Amiga, you might like to consider becoming a registered developer. There are three

categories of registered Amiga developers: Registered, Certified and Commercial. Registered is the cheapest, but provides less support. Certified is in the middle, followed by Commercial, the most expensive but with the best level of support. The latter is especially designed for people producing commercial products, who need to know about new hardware and operating system versions as early as possible so that they are able to take advantage of them and ensure their existing products work. If you are interested in becoming a registered developer, or simply want information on the subject, write to the above address.

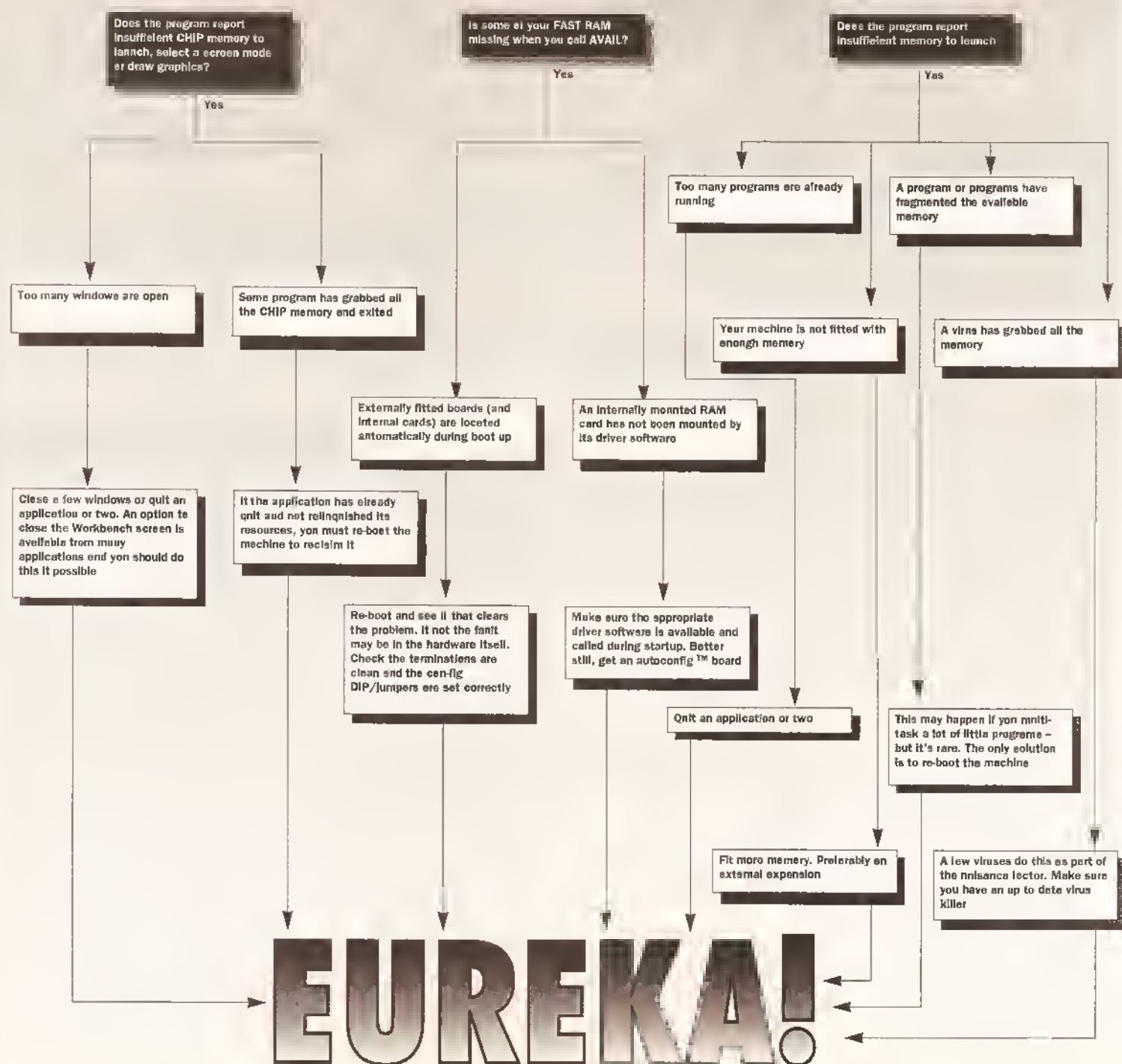
I recommend that programmers upgrade their operating system to Kickstart 2 if they have not already done so, as it is a much more powerful development environment than 1.3, and considerably more stable, which makes programming and debugging much easier.

Finally, good luck with your programming!

MEMORY...

Mark Smiddy recalls everything there is to know about memory and gives a handy guide to the Fat Agnus chip

A GUIDE THROUGH THE MEMORY MAZE



NEW

COMMODORE 386SX GAMES + WP PACK

CBM 386 16MHz, 40MB HD, 1MB EXP TO 17MB RAM, 3.5" DRIVE, VGA 14" COL MONITOR

- CD quality stereo speakers
- Ad lib Sound card
- Mouse
- Entertainment titles: Wing Commander, Hard Drivin 2, Mig 29, Trivial Pursuit, Escape from the Planet of the Robot Monsters, Pitfighter, Castle Master, Super Space Invaders
- Secretary Bird WP, Spreadsheet, Database
- OOS S
- User Friendly Front End Icon Menu
- Full 1 year on-site warranty

£649*

£824*

*** WITH 1MB A500 PART EXCHANGE!!
- PHONE FOR DETAILS!**

COMPLETE RANGE OF PC'S + NOTEBOOKS AVAILABLE

A3000 24 BIT SYSTEM THE ULTIMATE!!

- Extra 4MB Fast RAM
- Progressive 68040 accelerator
- 24 bit colour card
- Vlab 24 bit colour real time digitizer
- 24 bit 3D Art + animation s/w
- Fitting and Free 1/2 day customised training

TOTAL RETAIL PRICE OVER £6,000

HOBBYTE PRICE £3995 INC VAT

MITSUBISHI G650/40

A3 postscript colour ink jet printer, 8MB with starter kit

HOBBYTE PRICE £7349 INC VAT

FINANCE AVAILABLE
written details on request

ABSOLUTE BEGINNERS PACK 3-9 YEARS

VALUE/RRP

- Fun School 2, under 6 years, 6-8 years or 8+ years **19.99**
- Fun School 3 or 4, specify under 5 years, 5 to 7 years or 7+ years
- 12 stunning UK educational games with beautiful pictures, exciting animation and music that helps to develop number, word and other skills. Up to 6 skill levels. Conform to National Curriculum requirements. **24.99**
- Postman Pat (1.3 only), OR Edd the Duck (7+ years) OR Matched Pairs OR Blinky's Scary School **14.99**
- Hobbyte Infant or Junior (specify) Educational Pack, featuring up to 12 'Learn while you play' games **19.99**
- Hobbyte 3D Easy Children's Games, 10 pack disc including Train Set and other top entertaining PO titles **19.99**
- 10 Blank Discs **6.99**
- Joystick **9.99**
- Deluxe Paint II/Photon Paint II or Elf or Puzznik **89.99**

TOTAL VALUE 206.92

WITH AMIGA/CDTV 49.99

SEPARATELY 69.99

SPECIAL: With Cartoon Classics Games and Dpoint III + animation instead of Dpoint II/Photon Paint II (1MB req.)

VALUE 80.00

ADD 16.99

AMOS PROGRAMMER'S PACK (1MB REQ.)

VALUE/RRP

- EASY AMOS - complete, simplest possible, fun-to-use beginners programming course, learn to write professional looking arcade games, educational, etc. software in weeks, not years. Complete with graphics, sound, animation and more. Upgradeable to Amos. **34.99**
- Cartoon Classics Games: OR
- Lemmings **25.99**
- Captain Planet **25.99**
- The Simpsons **24.99**
- 50 Programme Hobbyte PO Greats Pack **39.99**
- 20 Blank Discs + 80 Capacity Lockable Disc Box **33.97**
- Mouse Mat + Oust Cover **9.98**
- 'Get the Most out of Your Amiga' book **9.95**
- Microswitch Turbo Joystick **9.99**

TOTAL VALUE 215.84

WITH AMIGA/CDTV 59.99

SEPARATELY 79.99

As above, but with:

- Amos the Creator instead of Easy Amos

WITH AMIGA/CDTV 69.99

SEPARATELY 89.99

NOTE: For both above packs, a second floppy or hard drive and a printer for listing are recommended, but not essential.

TRAMPY'S OR THOMAS'S PACK 2-9 YEARS

AT LEAST 57 EDUCATIONAL/FUN FILLED GAMES!

MAX VALUE/RRP

- The Shoe People - 6 colourful and entertaining games featuring Trampy and Friends to encourage early number reading and pre-reading skills. With Shoe People music OR Thomas the Tank Engine's Fun with Words - 6 separate easy to use learning programmes with animation and sound. **29.99**
- Shapes and Colours - Bobby the Clown entertains and lays down the foundation for maths and writing in 6 colourful animated games. **9.99**
- Fun School 2, 3 or 4 - the 'Fun School' suite have won just about every award going. 5 or 6 wonderful animated games. **24.99**
- OR Picture Book: 4 colourful and amusing games from ex 'Fun School' design manager will delight young children.
- Deluxe Paint II/Photon Paint II or Elf or Puzznik **89.99**
- Hobbyte Infant Educational PD Park, containing 10 fun while you learn games **19.99**
- Hobbyte 3D Easy Children's Games Pack **19.99**
- 10 Blank Discs, Oust Box, Joystick, Mouse Mat **26.96**

TOTAL VALUE 221.90

WITH AMIGA/CDTV 49.99

SEPARATELY 69.99

SPECIAL: With Cartoon Classics Games and Dpoint III + animation instead of Dpoint II/Photon Paint II (1MB req.)

VALUE 80.00

ADD 16.99

ARTISTS PACK

VALUE/RRP

- Deluxe Paint III with animation (upgradeable to OP IV) **79.99**
- Power 400dpi scanner with Powerscan professional s/w **99.99**
- 10 disc Hobbyte PD Graphics Pack inc. rip art + utilities **39.99**
- Cartoon Classics Games: OR
- Lemmings **25.99**
- Captain Planet **25.99**
- The Simpsons **24.99**
- 50 Programme Hobbyte PO Greats Pack **39.99**
- 20 Blank Discs + 80 Capacity Lockable Disc Box **33.97**
- Mouse Mat + Oust Cover **9.98**
- 'Get the Most out of Your Amiga' book **9.95**
- Microswitch Turbo Joystick **9.99**

TOTAL VALUE 400.82

WITH AMIGA/CDTV 139.99

SEPARATELY 169.99

DTP PACK

ALL AS ARTIST'S PACK PLUS: PAGESETER II

400.82

99.99

499.81

WITH AMIGA/CDTV 189.99

SEPARATELY 219.99

OR: PRO PAGE 3

269.99

670.81

WITH AMIGA/CDTV 239.99

SEPARATELY 279.99

ACCESSORIES

- Blitz virus protector + backup device for any external drive **23.99**
- AS20 Modulator **26.99**
- AS00 Deluxe control centre **44.99**
- Competition Pro Joystick **11.95**
- COTV Keyboard **39.99**

FLOPPY DRIVES

- Zydec 3.5 external drive, daisychain + on/off **48.95**
- Cumano CAX 354 3.5 external drive, beige **52.99**
- CDTV external 3.5 drive, black, **49.99**
- PC BB0B with anti click + Blitz back up and virus protector **67.95**
- PC BB0B as above, Cytodone compatible **78.99**
- PC BB0B with Blitz + X Copy **98.99**
- Dual drive as PC BB0B **115.95**

MONITORS/ACCESSORIES

- CBM 10B4501 monitor + leads **194.99**
- Philips BB33 MK II monitor and leads + (F19 + on-site) **199.00**
- Tilt + swivel stand for Philips BB33 **12.99**
- CBM 1960 High res monitor **379.99**
- Philips 7CM Hi-res SVGA .28bpc inc. tilt + swivel **259.99**
- Microway Flicker Fixer **79.99**

HARD DRIVES/CD

- AS70 100 SDD + (see also COTV P/X offer) **309.00**
- AS30 GVP 52 MB HD + 68030 1MB exp. to 8MB **655.99**
- AS30 GVP 120 MB HD + 68030 1MB exp. to 8MB **844.95**
- AS30 GVP 240 MB HD + 68030 1MB exp. to 8MB **1038.95**
- AS50 20MB HD **269.99**
- AS00 GVP1 52MB HD, exp to 8MB **332.99**
- AS00 GVP1 120MB HD, exp to 8MB **435.99**
- A1500/2000 GVP II controller, exp to 8MB + Quantum 52MB HD **264.99**
- A1500/2000 GVP II cont., exp to 8MB + Quantum 120 MB HD **406.99**
- Per extra 2MB fitted to above **62.99**

OLD AMIGA TRADE-IN

The best trade-in allowance, extra for peripherals and accessories. Trade in your old machine for a brand new A600/A1500/2000/3000, CDTV or even a PC.

SCANNERS

- Naksha 400 dpi 32 greyscale + DataScan software **87.99**
- Power Hand Scanner, 400 dpi, 64 greyscale, Powerscan software **97.99**
- Power Colour Hand Scanner **235.95**
- Sharp JX100 A6 Scanner + scanlab s/w, up to 18 bit **595.95**
- Sharp JX320 A4 Scanner + s/w, up to 24 bit **1729.00**

EXPANSION/ACCELERATORS

- AS00 512K RAM exp + dock **1.99**
- 1MB exp for A600 **49.99**
- KS1.3 or 2, ROM Shaver **39.90**
- GVP A500 accel. - see Hard Drives **719.99**
- G Force 68030 25MHz/1MB **589.00**
- G Force 68030 50MHz/4MB **1389.00**
- CBM A501 exp **29.00**
- AS00 + 1MB exp **28.99**
- AS00 + switch 1MB exp **37.99**
- Progressive 68040 AS00 **719.99**
- Prog 68040 A1500/A3000 **Phone**
- G Force 68030 25MHz/1MB 589.00

1.3 TO PLUS UPGRADE

Chip fitting and board upgrade available, by our qualified engineers or DIY kit **POA**

EMULATION

- KCS Powerboard **188.99**
- GVP 286 for GVP11 + 530 **216.99**
- AT Dnre **178.99**
- AT Bridgeboard for 1500 **329.99**
- XT Bridgeboard for 1500 **99.00**
- GVP 40/41 for 1500 **945.99**

DISCS

- 10 Blank OS/DD discs in box **6.99**
- 50 Blank OS/DD discs **27.99**
- 50 Blank DS/DD discs **17.99**

SOFTWARE

- Games - tel for list **FROM 3.50**
- ALL SERIOUS TITLES **BEST PRICES EG:**
- Coligari **175.00**
- Pro Page 3 **107.00**
- Imagine **187.00**
- All latest games **30% OFF**
- DP IV **54.00**
- Pro Draw 2 **79.99**
- TV Paint **697.00**

NO DEPOSIT CREDIT FACILITIES

Credit terms at 34.8% APR (variable) can be arranged for purchases over £150, subject to status. Competitive leasing schemes are also available for businesses, including sole traders and partnerships. Just telephone for written details and application form.

PRINTERS

ALONE	WITH STARTER PACK	ALONE	WITH STARTER PACK
Citizen 120+D.....	108.99	Citizen Swift 24e.....	239.25
Star 1C20.....	117.25	Citizen Swift 24e col.....	248.25
Star 1C200 col.....	167.25	Star XB 24/200 col.....	347.99
Citizen Swift 9.....	167.25	Star XB 24/250 col.....	416.99
Star 1C 24-20.....	177.25	HP Deskjet.....	349.99
Star 1C 24-200.....	197.25	HP Deskjet col.....	529.99
Star LC 24-200 col.....	239.99	HP Palmjet.....	629.95
Citizen 1240.....	176.99	B110ex Bubblejet port.....	204.99
Citizen 224.....	205.99	B1 300.....	338.99
Citizen 224+col.....	218.99	Star SJ 48.....	204.99

STARTER PACK: SDD Sheets A4 or continuous paper, Amiga to printer lead & Universal Printer Stand

• with new driver

ORDERING:

TELESALES NO: (0727) 56005

Next day delivery for credit card orders placed before 4.30pm subject to availability. Alternatively send cheque, postal order, bankers draft or official order (PLCs, Education and Government bodies only) to: Dept. AS, Hobbyte Computer Centre, 10 Market Place, St. Albans, Herts AL3 5DG. Please allow 7 working days for cheque clearance. Subject to availability, despatch is normally within 24 hours of receipt of cleared payment. Prices are correct at time of going to press, however, we are sometimes forced to change them, either up or down. Please check before ordering. Additional services and different packages may be offered in our showrooms, and prices may vary from Mail Order prices. Personal callers are asked to quote this ad to ensure Mail Order packages are offered.

DELIVERY CHARGES:

- Small consumables & software items
- Other items, except losers
- Offshore and Highlands
- IN ADDITION WE OFFER THE FOLLOWING EXPRESS SERVICES:
- Saturday deliveries
- Am next day
- UK MAINLAND (NOT HIGHLANDS): Despatched by post, please check charges when ordering
- Next day courier service, £10 per box
- Please enquire
- Normal rate plus £15 + VAT per box
- Normal rate plus £8 + VAT per box

Amiga prices, except where stated are inc. VAT. E.S.U.

TELE-ORDER (0727) 56005

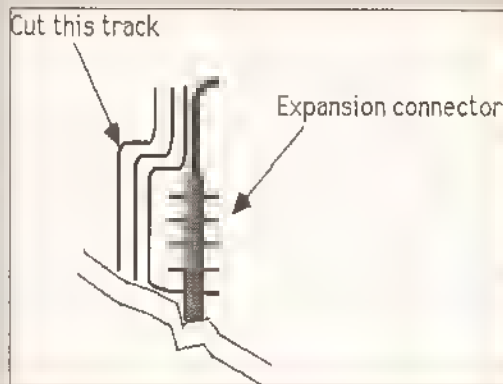


PHILIPS APPOINTED DEALER • HP AUTHORISED DEALER • CITIZEN DEALER PLUS •

continued from page 49

The figure you are looking for is the total amount of Chip memory available in bytes. If this is greater than 512K, the Fatter Agnus Chip is already fitted to the machine and there is no need to proceed with this.

If your machine is a recent model with 1Mb, but no Trapdoor expansion it might still have a Fat Agnus, but the board may require small changes to get 1Mb Chip. There are two ways to find out,



On revision 5 motherboards a small amount of surgery is necessary to get Agnus to see the extra RAM

either use a system Information utility – most PD libraries have such things or remove the lid and take a look.

The following list of parts and tools will be required to do this job properly.

The more expensive parts like a Torx driver and PLCC extractor are not absolutely necessary, this is noted in the text:

- The 8372A Fatter Agnus
- One set of jeweller's screwdrivers
- One small crosshead screwdriver
- One small flat screwdriver
- One Torx No. 10 screwdriver
- Long-nosed pliers
- A sharp craft knife
- A small soldering iron (17W)
- A clean, earthed workbench
- An ESP wrist strap
- The lid from a coffee jar or an old tin
- About an hour totally undisturbed

1. Switch off your machine and remove all the peripherals.
2. Place the Amiga upside down on the workbench and remove the six fixing screws – three along the back and three along the front.

These screws may be crosshead or Torx type. The Torx variety can be removed with a small flathead or jeweller's screwdriver. Be careful and do not use a normal crosshead.

Place all the screws in the tin lid so they don't get lost.

3. Gently remove the upper casing by prising it from the disk drive end. Make sure you do not snag the Escape or Enter keys – doing so will almost certainly damage the keyswitch.

4. Remove the keyboard connector by gripping the plug with pliers – do not wrench it by the cable. If the connector is stubborn try rocking it from left to right along its length.

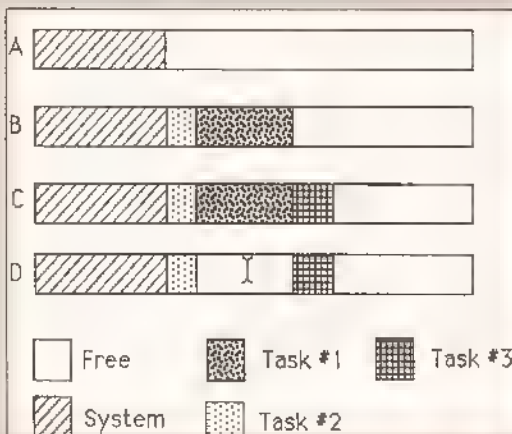
Now place the keyboard to one side.

5. Remove the four screws securing the shield in place and lift

the four lugs located around its periphery with a flatblade screwdriver – don't use a fingernail, the metal is sharp.

Remove the main and auxiliary edge connector shields and place them to one side.

6. If you have a PLCC (plastic leaded chip carrier) extractor, you can remove Agnus now. If not, you should read the instructions below detailing PCB removal. Some



Memory fragmentation in action.
See text for description

people advocate removing Agnus by levering it out, this can seriously damage the PLCC and they are expensive to replace. When you have removed the old Agnus, proceed at Step 16.

REMOVING THE PCB

7. Remove the 0.5Mb expansion now and place it to one side. This

continued on page 53

continued from page 49

IT'S A SIMM

My GVP Impact Series II is fitted with 4Mb RAM. I have been told I cannot expand beyond this unless I buy special chips. Is this true?

Don Butcher
Middlesbrough

In a manner of speaking, yes. The GVP Series II only has space for four 1Mb or 2Mb SIMMs. If your drive is already fitted with four, 1Mb SIMMs, these will have to be replaced with the special 2Mb ones. Some suppliers may allow you to trade in the old ones, but expect to be offered as little as £8 each.

FAST OR CHIP RAM?

What is the difference between Fast and Chip memory?

Derek Dawson
East Cheam, London

For openers there is no electronic difference between Fast and Chip memory, the difference is defined by the way the Amiga uses it. Chip is found in all Amiga computers and it gets this name because the custom chips have access to it.

This memory is shared with the CPU and this can cause arguments – technically called a bus contention. When the CPU and the custom chips (Paula, Agnus and Denise) want to access the RAM, the processor has to wait for them to finish with it.

The custom chips always take priority of over the CPU. Fast RAM on the other hand is only accessed by the CPU and since it does not have to wait for something else, the CPU works faster – hence the name Fast RAM.

EXTRA PORTION OF CHIPS

Can I fit more Chip memory to my machine?

J Kaufman
Gateshead

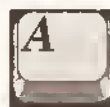
This depends on a couple of things: how much you already have and how much your machine can take. Basic Amigas like the older A500 and A2000 machines can take up to 512K of Chip – and this is supplied with the machine.

Later A500s can be modified to take up to 1Mb Chip by adding a Fatter Agnus (part no. 8372A) and cutting a few tracks. (This procedure is described in our featuring boxout on the Fatter Agnus).

Late model A500 Plus machines and the A600 are fitted with the Super Fat Agnus and can accept up to 2Mb Chip. 1Mb is fitted to the

standard machine and an extra 512K or 1Mb can be fitted in the trapdoor. Finance permitting, an extra 1Mb is a better option.

IN THE FAST LANE



How much RAM do I need? Do I need more Fast or more Chip RAM?

Elvis Jewell
Fife, Scotland

That depends on the sort of applications you want to run. Most serious applications require at least 1Mb – add another 512K to that if you use a hard disk. Most modern spreadsheets and word processing applications will work better in at least 2Mb; document processors and DTP systems realistically require at least 3Mb. With animation packages, the more memory you can afford the better – but the watershed minimum is 4Mb.

By nature of the expansions, Fast RAM tends to be more expensive than Chip and most applications gobble Chip memory at an alarming rate. Therefore, you should upgrade the Chip memory first and add Fast to that.

MORE MEMORY?



If I get a hard disk for my A500, should I get one with extra memory?

T Bear
Bridlington, E Anglia

Certainly! The throughput on many expansions for the A500 is not reliable and if you get a separate external expansion and hard disk at a later date, you may find the two are not compatible. A typical example is the Supra 500RX which seems incapable of working with the Rochard and A590 – it may work with others.

MEMORY BREAK-UP



What is memory fragmentation and what causes it?

Peter Hickman
Upminster

Fragmentation occurs mainly while the Amiga is running several user jobs at once. (Memory used by the system can and does get fragmented, but this is less likely to cause problems than user applications.)

Take a look at the diagram in the boxout – this shows four stages in a simplified fragmentation model.

a) The machine has just started. Some memory is allocated to the system tasks and the rest is (7Mb) free.

WHICH RAM?



I want to buy some RAM chips for my Amiga – what type and speed do I need?

Also, if I populate the main circuit board will that give me an extra 0.5Mb?

Peter Batty
York, Yorkshire

The RAMs on the main PCB vary according to the board revision. Some machines use 256K * 1-bit, later versions use 256K * 4-bit and you will need to check this first. 150nS RAM will do at a pinch but 120nS is more like it.

Adding extra RAM to the board will not affect the total amount of memory available if you already have a trapdoor type RAM expansion since this is physically mapped to the same address.

TINTED SPECS



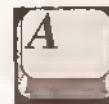
When I am using DPaint I occasionally get little specs of colour in odd places.

This happens on the Workbench screen too. Can you tell me what is going wrong?

Oomonic Station
Portsmouth

This sort of problem is often manifested as a dead cell or cells in one or more of the RAM chips. If it occurs on screen, the problem will almost certainly lie within one of the RAM chips in the machine itself or the trapdoor RAM expansion. One or two pixels are nothing to worry about but they could be advanced warning of some more serious failure looming on the horizon. This problem is much more difficult to diagnose when it occurs in Fast memory and special software tools must be used.

FORGETFUL CHIPS



I've seen some RAM chips specifications quoting "Soft errors better than..." What does this mean?

Michael Simpson
Romford, Essex

RAMs are constructed from semiconductor materials, like silicon. By its very nature, silicon can contain minute amounts of radioactive elements like uranium or plutonium. Although the semiconductors used in the chips is very pure, a certain amount may remain.

When the radioactive elements decay they give off particles, which in turn can cause memory cells to forget – literally! This sort of failure is extremely rare and can be fixed by the inevitable re-boot.

SHORT MEMORY



Why can the Amiga only take 9Mb of memory in total when the 68000 is capable of addressing 16Mb?

Mark Hamilton
The Wirral, Lancs

It all comes down to the machine's design. The 68000 has a 24-bit address bus which gives just over 16 million unique addresses. However, some of the possible address space is occupied by other things such as the ROMs, PA0, memory mapped peripherals and the Autoconfig™ system.

Machines like the A500 Plus are fitted with Super Fat Agnus chips and can address 10Mb in total. If your software is really memory hungry you should upgrade to a bigger processor such as a 68030 which can access considerably more RAM and do so a lot faster.

SIMMS, ZIPS AND DIPS



Could you please explain the difference between SIMMs, ZIPS and OIPs?

John Walker
Liverpool

These terms refer to the type of package used to house the memory chip. DIPS – dual in-line packages – are the oldest variety.

DIPS are still widely available in 256K and 1Mb packages and found mostly in trapdoor RAM expansions; but they can also be found in the A590.

ZIPS are a more modern version with a higher capacity but are rarely seen and hard to locate. Supra's 500Rx for the A500 uses ZIPS. SIMMs (simultaneous in-line memory modules) are the easiest to use – they are just a set of pre-mounted SMT (surface mounted) OIPs on a custom-made PCB. SIMMs are by far the easiest type of memory to fit – so simple that even a child could do it.

REMEMBER THE A1000



My trusty old A1000 only has 512K fitted – does anyone still make an expansion for it or will I have to replace it with a new machine?

for it or will I have to replace it with a new machine?

Graham Taylor
South Humberside

Since Commodore ceased supporting the A1000, developers have left it in their droves. However, you can still get a serviceable 0.8Mb expansion from Cortex on 051-236 0480.

continued on page 52

WHAT IS THE FAT AGNUS?

One of the most common queries about memory concerns the nature of the Fat Agnus chip – here's the ultimate answer...

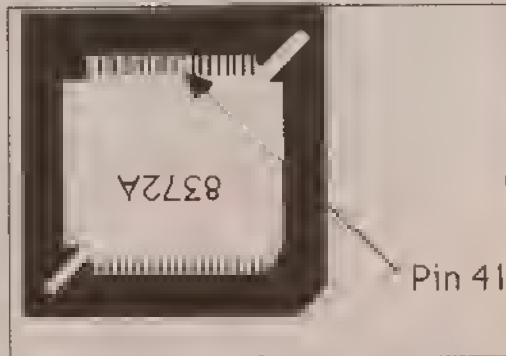
Fat Agnus is one of the Amiga's custom chips and is responsible for the handling of graphics memory among other jobs. Basic 1Mb machines come with 512K of Chip and 512K Fast RAM but by replacing the Agnus chip with an upgraded version

you can increase the available Chip memory to the full 1Mb.

UPPING YOUR MEMORY

This modification is not for the faint-hearted and will only work with A501-type 512K memory expansion cards – including the KCS Power PC card. If your expansion is not one of these the modification may be supported by the card – check with your supplier first.

Before starting this modification



Agnus – as it is positioned looking from the front of the machine (upside down). This shows clearly the location of pin 41, the ninth pin in from the right

you should first check if you already have the Fatter Agnus installed and working. To do this open a Shell and enter:

AVAIL

continued on page 52

JARGON BUSTING • JARGON BUSTING • JARGON BUSTING

Agnus – The custom chip dedicated to graphics. Earlier versions could access 0.5Mb of memory. Later versions (as used in the A500 Plus) can access 1Mb, while the latest can access 2Mb.

Bit – The smallest unit of memory. A bit can have a value of either 1 or 0.

Byte – A byte is a collection of 8 bits, capable of storing values between 0 and 255.

Chip RAM – The area of the Amiga's memory directly accessible by the custom graphics and sound chips.

Contiguous – All in one lump. The Amiga loads programs anywhere into its available memory. If it begins with 1Mb and loads in a short program, this may well end up somewhere in the middle of memory, meaning that the available contiguous memory has suddenly been halved.

Fast RAM – Any memory that is not Chip RAM. The custom chips cannot access it, and because such accesses to Chip RAM can block out the central processor and slow down its own accesses, Fast RAM is faster.

Kb – A kilobyte is 1024 bytes of memory.

RAM – Random Access Memory stores programs and data electronically whilst they are in use. RAM's contents are lost on power-down.

STOP PRESS
GCSE SOFTWARE
PACK - CALL!!

**WE WANT TO
BEAT ALL
PRICES!!**
CALL US!!

**ST ALBANS
NOW OPEN
SUNDAYS**
10.00AM - 4.30PM

Hobbyte

COMPUTING
ESTABLISHED 8 YEARS

10 MARKET PLACE ST. ALBANS
HERTS AL3 5DG TEL (0727) 56005/41396
THE GALLERY ARNDAL CENTRE LUTON.
BEDS LU1 2PG TEL (0582) 457195/411281

HOW TO USE THIS AD
For the first time ever, you can choose your own Amiga and software combination, and still benefit from the huge savings only available from package deals.
Want an A500 with 1500 software?
No problem!
Like on A1500 without games?
It's up to you!
All we ask is that you choose at least 1 software pack when you order your hardware (optional on CDTV, A3000 or C88M 386)

AMIGA 600

1MB, WB 2.05, 3.5" FD + Smart Card Interface
+ 12 month on-site warranty

	ALONE	WITH 8833/1084
A600	£264*	£464
A600 20MB HD (larger available)	£434	£629

2MB VERSIDH ADD £45
*or £269 with DP111 + Game
See below/across for software packs

AMIGA 3000

Latest version, 68030 25MHz, 3.5" BDDK FD + spare drive bay (or 4 spare bays on Tower), 512K 32 bit ROM, 4 Zorro III, slots with 2PC AT slots (or 1 CPU, 7 Zorro III, 2 PC AT on Tower), hard drive and memory as below:

DESKTOP	52MB	105MB	210MB	425MB
1MB video + 1MB Fast Ram	1549	1699	1899	2299
2MB video + 1MB Fast Ram	1649	1799	1999	2399
2MB video + 4MB Fast Ram	1799	1949	2099	2499
2MB video + 8MB Fast Ram	1949	2099	2249	2649
TOWER				
1MB video + 4MB Fast Ram	-	2299	2549	2949
2MB video + 8MB Fast Ram	-	2449	2699	3199

With Multimedia Pack: AmigaVision,
Deluxe Paint 4.1 and Scala
With extra 4MB Fast RAM (fitted if required)
With Philips SYGA 28dpi Inc. tilt & swivel

ADD £195.99
ADD £169.99
ADD £259.00

STARTER PACK I

	MAX VALUE/RRP
• 10 Blank Discs + 80 capacity lockable disc box	26.98
• Mouse Mat	4.99
• Virus Killer Disk	4.99
• DPaint III or Home Accounts	79.99
TOTAL VALUE	116.95
WITH AMIGA/CDTV	17.99
SEPARATELY	24.99

NO OTHER DEALER CAN BEAT OUR CREDENTIALS

- 8+ years experience in Commodore product and here to stay
- Commodore trained staff are friendly and helpful and are parents, multimedia, educational, games, programming or technical specialists (usually more than one!)
- Open 9-6 pm Monday to Saturday and 10.00 am to 4.30 pm Sundays for convenient shopping.
- Callers welcome for advice and demonstration at our 1600+ sq ft High St, Town Centre branches
- Next day delivery for most orders received by 5 pm; express am and Saturday services available
- Hardware carefully handled and delivered safely and reliably by cargo, insured, top name courier service
- 100% pre-despatch testing on Amigas
- Free 30 day, next day courier collection and delivery at HEW replacement (except product with on-site maintenance)
- Lifetime support and in-house engineers
- Upgrade and trade in offers to keep you up to date
- Exceptional after sales service

NOT JUST ANOTHER MAIL ORDER COMPANY

For years a major player in Amiga Mail Order, Hobbyte also boasts extensive expertise and experience in specification and support of multi-machine and specialist systems. Hobbyte have been recommended and trained by Commodore and successfully won major orders and support contracts from London Boroughs, MOD, educational establishments etc. We are pleased to be placed on tender lists.

This expertise is available to all our customers.

AMIGA 500 PLUS

Full UK spec, int. mouse, power supply, leads & manuals, etc. Inc.

	ALDNE	8833/1084
1MB	329.00	519.00
2MB	369.00	559.00

Zydec external drive with on/off & daisy chain port ADD 48.00
Also with Kickstart 1.3 + ROM Shaver for switching between 1.3/2.04 to eliminate rampability problems ADD 39.90

CARTOON CLASSICS GAMES PACK EXTRA (1 MB REQUIRED)

	VALUE/RRP
• Cartoon Classics Games: Lemmings	25.99
The Simpsons	24.99
Captain Planet	25.99
• Deluxe Paint III with animation	79.99
• 3 Disc Home Pack including Word Processor, Spreadsheet, Database, or PD Games compilation	9.99
TOTAL VALUE	161.96
WITH AMIGA/CDTV	19.99
SEPARATELY	29.99

1500 PACK EXTRA (ALSO FOR A500, A500+, A600 CDTV, 3000)

	VALUE/RRP
• The Works Platinum, word processor, spreadsheet, database	169.99
• Deluxe Paint III with animation	79.99
• Get the most out of your Amiga book	9.95
• Hobbyte 50 Programme PD Greats Park II	39.95
• Puzznir	24.99
• Toki	24.99
• Digital Home Accounts	29.99
• Elf	29.99
• Joystick	9.99
TOTAL VALUE	418.79
WITH AMIGA/CDTV	49.99
SEPARATELY	69.99
SPECIAL: Also with Cartoon Classics Games ADD 14.99	

WHAT THE CUSTOMERS SAY

"...extremely courteous and rapid response to my problem..." I will not hesitate to recommend you to my colleagues.
Dr Darrel Maddy - Slough
"Thank you for dealing so promptly with my requests..." I was reluctant about ordering my computer mail order. However I have been very pleased with my dealings with Hobbyte - you are to be recommended for your customer service."
Trevor Patterson - Bangor
"We have dealt with many of the leading computer suppliers, in the past, but the service you provided was second to none."
F W Bailey - Preston
"Thank you for everyone's good service..." It arrived at 7.20am the next morning."
David J Thomas - Wolverhampton
"I was very impressed with the service I received in the first instance, I really appreciated how quickly you managed to get the printer despatched from your Luton branch for me."
J S Cazodinos - Amersham

AMIGA 1500/2000

Full UK spec, with 1MB RAM, mouse, expansion as 2000, leads, manuals. New including Kickstart & Workbench 2.04.
Hard disc configuration inc. the high performance GVP II controller card, EXPANDABLE TO 8MB. Fast reliable 52MB + 120MB Quantum Drives are used.

	ALDNE	WITH 8833/1084	WITH 7CM + FFIXER
Dual Drive	485.00	682.00	859.00
DD+GVP+20MB HD	699.00	899.00	1065.00
DD+GVP+52MB HD	765.00	969.00	1129.00
DD+GVP+120MB HD	908.00	1112.00	1272.00
Per extra 2MB fitted to GVP			ADD £60.00
Also with Kickstart 1.3 + ROM Shaver			ADD £39.90
Also with XT/AT BB for PC compatibility			ADD £95/£200.00

CDTV

1MB, with Disc Caddy, Welcome CD + tutorial + remote control unit.
AS ABOVE WITH MATCHING DRIVE
KEYBOARD, MOUSE + WB 1.3

	£299*	£379*
As above	£299*	£379*
With Goldstar Black TV monitor + remote control	£458*	£538*
Extra RAM	EPDA	
• When you trade in your old Amiga 500 - phone for details. For price without trade in - please phone See below/across for software packs		

**NEW
PRICES**

THE HOT LOT PACK (1 MB REQUIRED)

	VALUE/RRP
• Cartoon Classics Games: Lemmings	25.99
The Simpsons	24.99
Captain Planet	25.99
• Deluxe Paint III with animation	79.99
• 10 GREAT individually packaged games, previous RRP's up to 39.99 each, phone to choose from current list, or leave it to us! Children's games available.	269.82
• 50 Programme Hobbyte PD Great Parks II	39.99
• Dust Cover + mouse mat	9.98
• 10 Blank Discs + 80 Capacity Disc Box	26.98
• Microswitch turbo joystick	9.99
TOTAL VALUE	513.72
WITH AMIGA	59.99
SEPARATELY	79.99
SPECIAL: ALSO 10 extra great games	ADD 25.00

PROFESSIONAL FAMILY PACK (1 MB REQUIRED)

	VALUE/RRP
• Cartoon Classics Games: Lemmings	25.99
The Simpsons	24.99
Captain Planet	25.99
• Deluxe Paint III with animation	79.99
• The Works Platinum Word Processor, Spreadsheet and Database	169.99
• Ed the Duck	29.99
DR Back to the Future and Postman Pat (1.3 only)	
DR Digital Home Accounts	
• Virus Killer Disk	4.99
• 50 Programme Hobbyte PD Greats Park II	39.99
• Hobbyte Infant, Junior (specify) or Secondary Educational Pack	19.99
• 10 Blank Discs + 80 Capacity lockable disc box	26.98
• Mouse Mat + Dust Cover	9.98
• Joystick	9.99
TOTAL VALUE	468.86
WITH AMIGA/CDTV	79.99
SEPARATELY	99.99
SPECIAL: Also with Star LC 2DD 9 Pin Colour Printer and Starter Pack	ADD 180.00
Also with Citizen 224+24 Pin Colour Printer and Starter Pack	ADD 230.00

AMIGA SPECIALISTS • STAR GOLD DEALER • CDTV CENTRE •

b) Two tasks (applications) have been launched. Let's say, a spreadsheet (1Mb) and a word publisher (3Mb).

c) A third task, let's say a database (1Mb) is started.

d) The word publisher is exited and the memory it used (3Mb) is given back to the free "pool" – but its position in the map cannot change, therefore the free memory has been divided into two large chunks.

Although the total free memory could be as much as 5Mb, this might be divided (fragmented) into two parts, say 2Mb and 3Mb. In other words, although 5Mb memory is available the largest block is just 3Mb. You can check this with the system command, AVAIL.

In practice this type of fragmentation is happening all the time but larger memory configurations are less likely to suffer from it.

Disks incidentally suffer from exactly the same fragmentation problem, but AmigaDOS handles the problem differently.

WHAT'S DMA?



What is DMA and why is it used so extensively?

**Paul Carvill
Harrow**

DMA simply means Direct Memory Addressing. Like many computer terms, DMA is a little vague. It simply means some chip other than the CPU has direct access to the machine's RAM.

DMA operations are usually performed while the CPU is doing something else – actually executing instructions and this can make the machine operate faster.

It is commonplace to assume a CPU is constantly accessing RAM while a program runs, but this is not the case for most processors. In practice, the machine performs a something called the fetch-execute cycle. In simple terms, this means it gets a series of bytes from memory and assembles them into an instruction – during this time it has control of the data and address buses.

As the instruction is executed, the CPU relinquishes bus control and lets other chips have access to it. In fact, it's a little more involved than that, but such discussions are beyond the scope of this feature.

ELEPHANTS NEVER...



Why can I never remember my wife's birthday?

**David Laurence
Cloucester**

You need is something like The Pest appointment scheduler or a decent calendar. Both these have been published in recent instalments of *Amiga Shopper's AmigaDOS* series.

PC RAM IN AN AMIGA



I recently purchased a 4Mb memory expansion for a Compaq computer.

Obviously this was not suitable for the Amiga, but I was hoping I could transfer the chips to an Amiga expansion board. The board is populated with these chips: TC511000AP-10. If these chips can be utilised, could you please recommend a suitable expansion board?

**C Slater
Troon
Ayrshire**

The chips on the board are 1Mb x 1 100ns chips. In theory these can be used; most Amiga 2000 cards use 1Mb x 1 chips. However there are a few problems...

First, recent Compaq memory cards use surface mounted memory chips. These look like small square blocks with pins on each side, soldered directly to the circuit board. These are not removable and can't be used with the Amiga. If the chips are socketed they are likely to be one of two types: DIP type are standard chip-shape with a row of pins along each side; ZIP are newer chips which stand side-on with all the pins along one edge.

The only board I know of for the Amiga that will take 1Mb x 1 DIP chips is the Spirit X-RAM expansion, although I don't know of anyone who is still supplying this.

As for ZIP chips, I haven't found anything that will use 1Mb x 1 ZIPs. All the expansions using ZIP chips take the 256 x 4 ZIP instead.

WHAT ARE RAM DISKS?



I'm a little confused over the term RAM disk. Please could you explain it to me?

**D Aston
Glasgow**

A RAM disk is a special kind of 'imaginary' disk drive. You may have noticed that floppies can be slow – the RAM disk is a way round this. An area of the Amiga's memory is set apart from the rest and treated as if it were a disk drive. When a file is loaded from the RAM disk, the information is copied from that part of RAM to the Amiga's normal memory where it can be used as normal. Remember, though, that when the machine is reset, everything will be lost.

continued from page 52

Isn't absolutely necessary but it will help avoid strain when the PCB is removed.

8. Remove the disk drive's power and IDC connectors from the PCB.

The IDC will be quite stiff, and might need gentle leverage with a fine flat-blade screwdriver.

9. Lift the machine on its edge and remove the three screws in forming an "L" shape located near the disk drive. Hold the drive firmly while you do this.

10. Looking at the disk drive from the front of the machine you will see a single fixing screw on a pillar. Loosen, but do not remove this and you will be able to remove the drive entirely.

11. Looking from the front of the machine, locate the PCB securing lug. This is a small plastic catch about five inches in from the left of the case.

Insert a flat blade screwdriver in the slot underneath the case and push the lug towards you. Now, very carefully lift the PCB out of the case and put the other half to one side.

12. Remove the 12 nuts securing the peripheral sockets to the shield. You should do this with a jeweller's spanner or a very small socket, but a pair of pliers will suffice.

If you must use pliers, take care not to damage the four male connectors: RGB, Serial, Joystick and Mouse.

13. Remove the lower shield from the PCB and place it aside.

14. Underneath the PCB you will see two small holes surrounded by a square of solder pads. This is the underneath of the Agnus PLCC.

You should be able to push a pair of long-nosed pliers or a couple of small dowel pegs into the holes and pop Agnus from its socket.

15. Replace the bottom shield and replace screw the nuts back in place.

Now replace the PCB back in the plastic case bottom and snap it into place.

FIXING FAT AGNUS

16. Your new Fat Agnus chip will have been supplied in foil wrapper, remove that and study it for a moment – be careful not to touch the pins more than you need to. One of the pins, 41 actually, may well be missing or bent back. If this is the case, the Agnus has been supplied ready modified for the UK market; if not, it has to be isolated.

Leaving pin 41 in place is not a problem, but it will leave your machine stuck in NTSC (200 line)

mode as opposed to the 256 lines available with the PAL system.

Check the Agnus for fit in the socket and using the first illustration for guidance, isolate pin 41.

Counting in from the right, pin 41 is the ninth one. Bend it back and wrap a small piece of insulating tape around it.

Do not cut it off – if you cut the wrong pin, the whole chip will have

"You don't need to make a 1/5 scale model of the Cheddar Gorge – just a little nick."

to be replaced. Now push the Agnus chip firmly home and wipe your brow.

MODIFYING THE BOARD

17. Next job is to locate jumper JP2. It's a trace of solder between three pads and clearly marked on board revisions from 5 upwards, located near the CPU.

If you have a CPU mounted RAM expansion, AT-Once or similar you will have to remove that first to gain access. Using a knife make a small incision through the jumper and solder the other two pads together.

18. If you have a revision 5 PCB the next part is tricky.

Study the second diagram and locate the four tracks running near to the top edge of the trapdoor expansion connector. You can identify the right one because it terminates in a blob of solder opposite the eighth pin-pair on the expansion connector (counting down). Make a small nick in that track being careful not to damage any others; each one is less than a millimetre wide and a fraction of that thick!

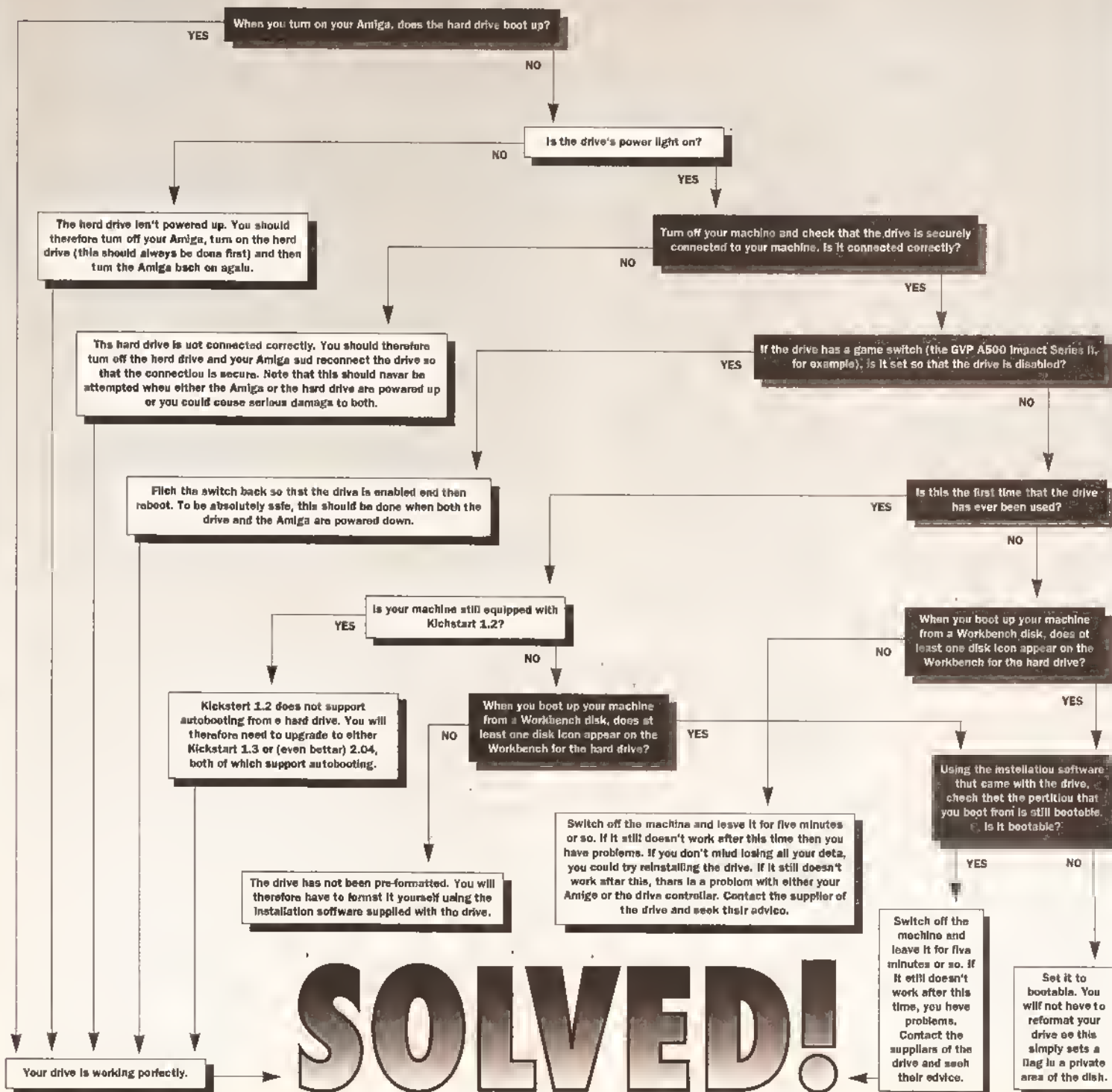
Revisions 6A and higher are much simpler. Just locate jumper JP7A and cut it – you don't need to make a 1/5th scale model of the Cheddar Gorge – just a little nick.

19. That's all there is to it. Just put everything back together in reverse order, switch on and check you have 1Mb Chip. It's important to disable programs like NoPalReset just in case you haven't isolated pin 41 correctly. This will cause your machine to constantly reset during re-boot and this can be quite alarming.

HARD DRIVES...

Jason Holborn gets to grips with your hard drive problems and suggests a few pointers to keep your drive on its feet

ON THE ROAD TO NO MORE HARD DRIVE HASSLES



GVP BOOT PROBLEMS



I am having problems with my GVP Series 2 A500 hard drive that I bought in the spring of this year (it is therefore still under guarantee). I have found that it has started to produce a lot of read/write errors even after formatting it and restoring its contents from an Archive Viper Tape Streamer.

I have found that it will often not boot up at all after using the game switch (the children use the Amiga for games) therefore forcing me to use the GVP blndrivers and a Workbench boot disk to access the drive. Sometimes I even have to resort to booting up under 2.04 to get the drive to work (my machine is equipped with a ROM shaver although I still use 1.3 most of the time).

I have also noticed that the power supply for the GVP drive gets very hot and the speed of the fan inside the drive seems to fluctuate. Could this be the problem?

**Michael Reynolds
Holsworthy**

My guess would be that your GVP power supply is causing the problem. If the cooling fan inside the drive is fluctuating in speed, then it seems pretty obvious that the drive is not being fed a consistent supply of power.

This would definitely cause the drive to fill with read/write errors as the inconsistent power supply is interrupting the drive while the Amiga is trying to access it. It's a bit like turning the drive on and off rapidly while the Amiga is reading or writing a file to the drive. If you've ever been stupid enough to try this with a hard drive (which I hope you haven't) then you'll know all too well that the drive doesn't continue working for very long. A dodgy power supply will produce a similar result.

My advice to you would be to pack up your hard drive (and power supply) and send the lot back to Silica explaining the problem and the solution that I've suggested.

All GVP drives have a 2 year guarantee so I'm quite sure Silica will be more than happy to sort it out for you.

BY THE SEA(GATE)



I was recently given a Seagate Technology 14.8 Mb hard drive Model ST-419.

Do you know if it would be possible to connect and use this drive with my Amiga?

**DJ Appleby
British Forces
Germany**

To be perfectly honest, the Seagate drive that you have been given is about as useful as a hair dryer in a hurricane. These rather geriatric drives are complex beasts that are difficult to set up and rather slow in operation. Anyway, what's the point in having a 14.8Mb hard drive?

15Mb may sound like a lot of storage space now, but you'd be amazed just how quickly it would fill up! Do yourself a favour and buy a decent SCSI drive (the GVP Impact Series 2 is a goodie). As for the Seagate - well, I've been told that they make lovely paper weights!

GETTING YOUR BACKUP



Being something of a beginner to this computing lark, I'd like to ask your

advice concerning the purchase of a hard drive for my 1.3-based A500 (I bought the machine second-hand). I use my Amiga mainly for sampling and music composition so as a result I need a hard drive to store all my samples and songs. So far I've got about 10 disks filled with samples which I intend to transfer to hard disk. Which drive would you recommend? I understand that the GVP drive is a very good choice but I'm not sure whether to buy the 52Mb drive or to spend out a bit extra and have the higher capacity 110Mb drive. Will I really need 110Mb of storage?

A PC-owning friend tells me that it is very important to back up a hard drive every so often to prevent from losing all your files in the event of a hard disk failure. He uses a program called FlexiBack on the PC. Is this available for the Amiga? If it isn't, which Amiga backup utility would you recommend?

**John Holmes
Doncaster**

Deciding upon what size of hard drive to purchase is a little like trying to decide how much RAM you need inside your machine. Although the drive capacity that you eventually choose may seem more than adequate for your needs, you can bet that you'll eventually wish you had bought a larger drive.

The first drive I ever bought was a 20Mb A590 which I used to run on my old A1000. Back then 20Mb sounded like a lot, but after transferring all my favourite programs on to the drive, I wasn't left with a lot of space to play around with (I had about 1.5Mb left!). When I treated myself to a B2000, I moved up in the world and treated myself to a 40Mb Quantum SCSI drive. Once again, 40Mb sounded like a lot, but it too was soon filled. After little more than a couple of months, I traded the Quantum in for a 90Mb Fujitsu SCSI

drive and guess what? Yep, the bl**dy thing was filled within 2 months!

The moral of this story is simple - although 52Mb may sound like one heck of a lot of hard disk space, it'll fill up faster than you could possibly imagine. If you can afford it, go for at least 100Mb.

My personal choice in hard drive for the A500 is the GVP Impact Series 2. GVP makes some cracking bits of kit and the Impact Series 2 drive is certainly no exception. As you state, it's available in 52 and 110Mb form with space for up to 8Mb of RAM on board. They're also jolly fast, so you'll never be left waiting for your favourite sequencer to load.

FlexiBack is actually a shareware program for the PC so it should come as no surprise to you to learn that it is not available on the Amiga (very few PC titles are). If you're after a hard disk backup program (and I would recommend you use one) then you won't go far wrong with *QuarterBack* from Central Coast Software. The latest release (version 6.0 I think) is available from HB Marketing on 0753 686000.

NO ADVANTAGE?



Having treated myself to an ICD

Advantage 2000 controller and 40Mb

Quantum drive for my Amiga 2000 late last year, I've noticed a distinct decrease in the drive's performance. When I first bought the drive, it positively rattled along but these days it seems to take an absolute age just to display the contents of the root directory. Is the drive worn out?

**C Boothe
Trowbridge
Wiltshire**

You'll be pleased to learn that there's actually nothing wrong with your hard drive whatsoever. Judging by the symptoms that you've described, it sounds to me that your drive is simply suffering from a case of disk fragmentation, a problem which plagues all hard drives eventually.

Like a floppy disk, files on a hard disk aren't stored one after another on the disk's surface. As you delete and add new files, the drive's

JARGON BUSTING • JARGON BUSTING • JARGON BUSTING

Tape Streamer - A hardware device which is used to back up high capacity hard drives. Cheaper versions use tapes similar to conventional audio tapes although the magnetic tape they use is of a much higher quality.

SCSI - 'Small Computer Systems Interface'. SCSI is an industry standard connector which enables your Amiga to talk to SCSI-compatible devices including hard drives, tape streamers, CDROM drives and scanners etc.

RDB - 'Rigid Disk Block'. The common name for the format used by Amiga hard drives. Any controller that supports RDB can use a drive formatted under the RDB standard regardless of what make of controller it was originally formatted with.

AT IDE - Similar to SCSI, AT IDE is another type of Interface used to connect a hard drive to the Amiga. The hard drive inside the new A600HD is an AT IDE drive. Although AT IDE and SCSI offer similar speeds of operation, SCSI is more flexible.

Fragmentation - The more you use a hard drive, the more it will appear to slow down. As the drive fills up, it may not be possible for the Amiga to store the file in one big lump on the drive. Instead, it will split the file into 'fragments' which are stored in whatever space is available. When the Amiga tries to load this file, it has to hop about, piecing these fragments together causing a decrease in drive performance. This speed decrease is caused by disk fragmentation.

Partition - Most hard drives allow you to split them into two or more sections called partitions. As far as the Amiga is concerned, each partition is a hard drive in its own right. Partitioning is a good practice as it gives better data security and makes your drive more organised.

Head Parking - Parking a hard drive forces the drive mechanism to move the head (the part that reads the information from the magnetic disks) away from the disk surface. This ensures that the head does not come into contact with the disk causing what is called a 'head crash'.

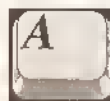
Library files - A file containing a collection of routines that can be called by external programs to carry out particular operations.

contents can be spread across the disk in quite a seemingly untidy manner. After a while, the free space on the drive may become so scattered that it may not be possible to store a larger file as one big file on the disk.

To get around this, the Amiga splits the file into 'fragments' which are then stored separately on the disk (as far as the user is concerned, a fragmented file still appears to be stored as one file). When the Amiga loads a fragmented file, the drive head has to hop about the drive reading in several different files to form the single file that you originally saved (all this is performed automatically of course!).

All this hopping around obviously affects the performance of your drive. Thankfully it is possible to reconstruct the structure of a hard drive so that files are not fragmented using a software utility such as Central Coast's *QuarterBack Tools*. You'll have to back up your drive first, but defragmenting a drive can speed it up considerably. *QuarterBack Tools* is available from HB Marketing on 0753 686000.

THE GREAT DIVIDE



I recently bought a GVP hard drive for my Amiga 1500 and I'm very pleased with it.

As soon as it was installed inside my machine, I set about copying all my favourite software on to it - I now have a drive which contains *ProPage 3.0* (plus about 200 fonts), *DPaint 4*, *ProDraw 2* and a massive amount of work files. Problem is though, it's all starting to get a little messy.

Looking back, I know now that what I should have done is to have split the drive (it's a 105Mb Quantum drive by the way) into three partitions - one for *Workbench 2.04*, one for all my programs and another for my files. I've been told that the only way to partition a drive is to reformat it. Is this true?

I have to admit that I'm a bit lazy and therefore I can't really be bothered to back up 105Mb of data on to floppy disk and then have to install the whole thing from scratch.

I'm hoping for a miracle here, but is there possibly a method of partitioning a drive without having to faff about with *QuarterBack*?

Steve Turnlpp
Glasgow

Sorry Steve, but modern technology has no miracle solution for us lazy people. I'd like to restructure my hard drive too, but I too am faced with the daunting prospect of backing up a huge hard drive. I'm afraid the only way to change the structure of a hard drive is to reformat it.

In your particular case, you don't necessarily have to back up the entire drive. Even if you do, you may find that you can't restore the files that you have backed up 'en masse' once the drive has been partitioned (don't forget, each partition is treated as a separate drive by the Amiga).

Providing that you've got all your programs stored on floppy disk, all you would have to back up is your work files.

Make sure though that the partition you create to hold these

files is large enough though - most backup programs simply stream out the files as one huge binary file that is split across several disks.

Once the drive is partitioned, you can then reinstall all your programs separately and therefore customise their placement on the drive to suit your needs. This way you get a chance to rethink not only the organisation of the drive partitions, but also the contents of each partition (DTP software in a separate directory from music programs, for example).

Restructuring a hard drive is just the thing to while away a boring Sunday afternoon (who knows, maybe even I will get around to doing it one day!).

TOWER POWER



After years of drooling over the specification of the Amiga 3000, I've finally taken the plunge and upgraded from my aged B2000 to a spanking new 25MHz A3000T. Problem is though, the A3000 has its own 100Mb hard drive and (as a result) I've got a spare drive which is filled up with all my favourite software and is organised just how I want it. Is it possible to connect the drive to the 3000T and transfer the contents across onto the 3000T's internal drive? Will the 3000T be able to read the drive (it was formatted using a GVP controller)?

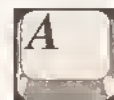
Paul Simpson
Norwich

Thanks to the wonders of the Amiga's RDB (Rigid Disk Block) format for hard drives, I see no

reason whatsoever why you should have any problems connecting the drive to the 3000T through its SCSI connector (you'll still need a power supply for the drive though).

If you fancy extending the storage capacity of your new machine, you could even leave the drive attached and use it as just another partition. If you'd like some help with this, send me the 3000T and I'd be more than happy to do the job for you (just don't expect to get it back!). Joking aside though, it's a fairly simple task.

VIRUS ALERT!



With so many viruses now plaguing the Amiga, is it possible for any of them to

infect a hard drive? I've got a 180Mb drive connected to an Amiga 3000 (which I use for my work) but my children also use the machine for playing games. They'd crucify me if I stopped them from using the machine, but equally I need to be sure that the drive won't be infected by any viruses.

What options are there available to me?

Don Jones
Newcastle-Upon-Tyne

The vast majority of the viruses that are currently doing the rounds on the Amiga are what are called 'bootblock' viruses. That is, they live in the boot block of a disk. Hard drives don't have boot blocks, so it's impossible for a conventional boot block virus to infect a hard disk.

That's not to say that hard disk owners are completely safe though - far from it. It is still possible for a

CARE FOR YOUR HARD DRIVE

As long as you follow a few simple guidelines though, most hard drives will perform virtually problem-free for years. Here's a rundown of the sort of precautions you can take to keep your hard disk in tip top condition.

1. If your hard drive has an external power supply, always turn the drive on before you power up. Even then, it's best to pause for a few seconds before turning on so the drive has time to settle.
2. Never turn the hard drive or your Amiga off whilst the Amiga is accessing the drive. You must always wait until disk activity has ceased before powering down. Once again, the hard drive should be powered down before the Amiga.
3. Better still, get into the habit of parking the drive's heads before turning either the drive or the Amiga off. Although most modern SCSI drives feature auto-head parking, parking the heads

manually is a very good habit to pick up.

4. Back up your hard drive on a regular basis. I know, backing up even a 40Mb hard drive is very boring, but you've only got yourself to blame if a problem does occur and you lose all your data. If you use the Amiga professionally, it may even be worth your while investing in a tape streamer.

5. Keep the drive away from any source of vibration. Although hard drives are quite robust, it doesn't take much to cause the drive to suffer a head crash. You should therefore never put your system too near loud speakers, spin dryers (you may laugh, but people do the strangest things!) or any surface that can be knocked about by clumsy pets, children, etc.

6. Always keep the Amiga and the hard drive well ventilated. You should therefore never pile books and magazines on top of either for long periods of

time. Most external hard drives have cooling fans - if this is covered up by a clumsily placed pile of disks or magazines, then you're asking for trouble. Overheating can cause serious damage to most forms of electrical equipment.

OK, so you've followed all these guidelines but eventually something does go wrong. Well, over these four pages we'll be sorting out a few of the more common problems that plague hard disk owners. If your letter isn't published, then flick through all the questions and the chances are that there is someone out there who has exactly the same problem as you. With the advice that we've provided, most hard drive problems can be sorted out without having to contact the manufacturer.

If the worst comes to the worst however, don't forget that most hard drive suppliers operate some form of technical helpline. If you're still stumped after reading our trouble shooting guide (we'll be surprised if you are, though), why not contact the suppliers and seek their advice. Don't get stropky with them though - suppliers are far more open and willing to help if you speak nicely to them.

hard disk to be infected by what are known as 'parasite' and 'trojan horse' viruses.

Parasite viruses work by attaching themselves to certain files (usually important system files) whilst Trojan Horse viruses are viruses that are 'hard coded' into a program by an unscrupulous programmer.

Thankfully very few of these viruses exist so the risk of catching a virus on your hard disk is reduced somewhat. It's still worth installing a decent virus killer on your system though - I personally recommend John Veldhuls' *Virus Checker 6.1* which can trap just about any form of virus. Have a chat with your local PD library and I'm sure they'll be able to supply you with the appropriate Fish disk.

Another point in your favour is the fact that your system is running Workbench 2.04. Most virus programs are sloppily written so although they worked under Workbench 1.3 (only just though!), the vast majority of them die completely when they encounter 2.04. This won't always be the case though - virus programmers probably have 2.04 as well now!

Take my advice - arm yourself with a copy of *Virus Checker* and update it every time John releases a new version.

PARKING SPACE



I have recently bought a second-hand IC0 AdSCSI controller and 52Mb drive for

my Amiga 2000 but one thing concerns me.

I've read in numerous articles that the vast majority of modern SCSI drives offer automatic head parking as standard.

Presumably the Quantum drive that I have also has this feature but the software that comes with the AdSCSI includes a park program that the manual insists should always be run before switching off the machine.

Unfortunately I don't have this park program and I've been forced to turn the machine off without first parking the drive. Is this safe? Should I try and obtain a copy of the parking program before it's too late? If so, where can I obtain it? Your help would be much appreciated.

Peter Holbron
Wells
Somerset

Software head parking utilities are strange beasts. Whilst they are technically not needed with a drive that offers auto-head parking, I believe it is still a good idea to use a park program just in case something

should go wrong when you turn off your Amiga.

All Quantum SCSI drives support auto head parking (you should hear an audible 'click' when the machine is turned off - this is the drive parking itself) so it's entirely up to you whether you use a park program or not.

As I said, technically, you shouldn't need it, but you'll sleep a lot better if you know that the head has definitely been parked (especially if you move your machine from one place to another). I would never turn off my machine without manually parking the drive first. Check out the box on page 56 for some tips on looking after your hard drive.

600 QUESTION



I have an Amiga 600HD with a 20Mb internal hard disk. The A600 is the first

computer that I have ever owned and I find the hard disk very useful indeed. Unfortunately my understanding of the A600 is not quite on a par with my enthusiasm, so I'd like your advice.

I've just purchased my first Fred Fish PD disks which contain a number of utilities that I'd like to install on my hard drive (Isn't Amiga PD great?). I've tried copying them across simply by dragging icons, but a couple of the programs don't work when run from the A600's drive.

Is there a problem with my machine or am I just a little bit thick?

If you could provide me with a few pointers on how to install software from floppy to hard disk it would be a great help.

Philip Vanner
Nuneaton

You've stumbled across a problem that all new hard disk owners have to face eventually. Whilst some programs can be copied on to a hard disk simply by dragging them across via the Workbench, there are others that rely on extra 'invisible' files that can't be copied in this manner unless you know where to look.

If you encounter a program which stubbornly refuses to work once transferred, then copy the drawer in which it lives rather than just the single icon which you see on your Workbench. This usually works if the program accesses data files such as pictures that are stored in the same drawer but don't have their own icons. If you feel slightly more adventurous, why not display the contents of the entire directory using the Workbench 'Show All Files' option in the Window menu? This instructs Workbench to create icons for any files that don't already have

them. Once again though, you need to know exactly which files the program needs, so the first option may be a better bet if you're not too sure.

If this fails to work, read the documentation included with the program to see if it needs certain system files transferred.

Many programs use their own library files which must be transferred for the program to work. If it does, then copy these across on to the appropriate system directories on your hard drive and the program should work. Check also that the program doesn't require access to its own custom font. If it does, copy this across too.

All this copying sounds pretty complicated, doesn't it! Well, my advice to anyone who has just bought themselves a hard drive but can't face the thought of learning AmigaDOS is to invest in a decent directory utility such as INOVAtronic's absolutely amazing *Directory Opus*.

Directory utilities are a real boon for hard disk users as they enable you to move around the directories of a hard disk performing all sorts of house keeping chores such as copying, deleting, renaming and even a spot of hoovering (only joking).

It's about time more PD programmers started to think about hard disk users. Virtually all commercial applications software packages include hard disk installation utilities these days, so it's about time PD programmers followed suite. Life would be so much easier for everyone involved.

USING A MAC HARD DISK



I have been given the option to purchase a 20Mb Macintosh hard drive fairly

cheaply. Is there any way that I can connect it to my Amiga 500?

If it is possible to connect it, will there be any problems with autobooting and software compatibility?

J O'Shea
Killarney
N Ireland

Macintosh drives use the standard SCSI interface, so, yes, you can connect it. You will need to purchase a hard drive interface for your Amiga 500. One of the cheapest is the DataFlyer, but any SCSI interface for the Amiga will work.

As long as you are working with Kickstart 1.3, you will have no problems with autobooting. You shouldn't have any special problems with software either. Some software will refuse to work with any hard disk, but that's because the software was badly written and won't be the fault of your new hardware.

HARD DRIVE HARD TIMES



I bought a second-hand GVP Impact 500. I put in a MiniScribe 20Mb drive and it worked fine.

The trouble is that when I add 2Mb of memory in the sockets provided it seems to clash with the internal memory which is a 1.5Mb expansion board from Power Computing.

I have put the drive on a bog-standard A500 and the same fault appears. I have also changed the power supply to the hard drive, but the fault persists. The memory chips have been changed four times without result.

Help!

T Cooper
Trowbridge

If your memory fails to work on a bog-standard A500 and you've changed the RAM and the PSU, then I'd have to say that your GVP Impact 500 unit is probably faulty.

The circuitry that handles the SCSI drive and the circuitry that handles the memory are mostly separate, so it is quite conceivable that the SCSI drive will work fine, but the memory fails.

NOT SO QUIET DRIVE



I purchased a QTEC external drive, model EX-310 about 7 months ago.

Although the drive is very reliable, it makes a very loud whirring sound while accessing disks.

It didn't bother me until I saw an advert for the drive, stating that it was very quiet. Is there any way of replacing the motor drive?

I have also noticed that with the large majority of games, if a disk is left in the external drive the motor spins continually. Is this normal?

Simon Grey
Easton
Bristol

The QTEC EX-310 is indeed a very quiet and reliable mechanism, so I imagine that there is a problem with yours.

It is not so much the loud whirring that bothers me, because one man's loud whirring can be another man's gentle whisper.

The problem is that the drive light should not remain on for longer than a few seconds after disk activity has ceased. What you ought to do, is get a reputable dealer to check it over to see what the problem is.

Whatever you do, don't get involved with replacing drive motors - you are definitely asking for trouble if you attempt this.

DISK TOP VIDEO PERIPHERALS - GENLOCKS & VIDEO DIGITISERS

ROCGEN PLUS £129.99 A superb value Genlock with separate overlay & dissolve controls. RGB pass thru. Ideally partnered with the **ROCKEY** for more advanced, and truly professional effects.

ROCKEY £239.99 This add-on unit for the **ROCGEN Plus**, gives you access to professional effects such as chroma keying, luma keying, key in window, graphics overlay, key thru etc.

HANDY SCANNER £99.99 In our experience, this is by far the best hand scanner in this price bracket. Comprises 400dpi, 64 Level Grey Scale scanner, **DATASCAN PRO 2** software & psu.

VIDI 'The Complete Solution' £139.99 Comprises Vidi, RGB Splitter & Vidichrome
RGB SPLITTER Rombo Electronic type £57.99 Enables colour images to be grabbed.
NEW VIDI 12 DIGITISER £229.99 please phone for low price
SUPERPIC £499.99 Frame grabber, high quality digitiser & genlock in one professional unit.
SUPERPIC ANIMATE £629.99
COLOURPIC £419.99 Full colour high quality
COLOURPIC ANIMATE £529.99 frame grabber & digitiser.
CABARET FOR COLOURPIC/SUPERPIC £28.99
CABARET PLUS £87.99
RENDALE SUPER 6802 SVHS GENLOCK £499.99 S-VHS input/output for clearer colour reproduction.
G2 VIDEOCENTRE PLUS - SUPERB £1099.99 Ask for brochure!

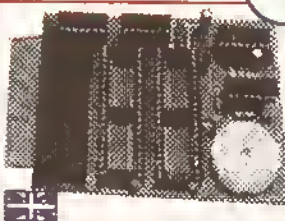
Wide range of EDUCATIONAL SOFTWARE & TOP 30 GAMES AT DISCOUNT PRICES

MEDIASTATION £139.99 Comprises **DIGIVIEW GOLD** quality video digitiser, (the best for use with a camera) + **DIGIPAINT 3** graphics editor + **ELAN PERFORMER**.

ACCESSORIES & SPARES

AMIGA ROM SWITCH £27.99
KEYBOARD OPERATED

Our Keyboard operated Two way Rom switch enables you to use either of 2 Workbench roms. To switch over, just hold down Control/Amiga/Amiga keys until you hear a beep. To warm start with the current rom, simply release the keys before the beep - ie within about 4 seconds. Fits but please state which Amiga you have when ordering. No soldering, & only the existing rom chip to be removed (unlike other types). Your warranty is unaffected if filled by us - filling charge £15.00.



KICKSTART 1.3 ROM £39.99 Just plug in place of existing rom. No soldering
KICKSTART 2.04 ROM £39.99 Upgrade your 1.3 Amiga - just plug in.
OFFICIAL WORKBENCH 2 UPGRADE KIT £79.99 New Rom & full workbench 2 manuals & disks.
FATFAT AGNUS 8372A £30.99
SUPER DENISE £39.99
GARY £39.99
8520 A/D CHIP (Drive & printer port) £15.99
A520 MODULATOR £29.99
AMIGA INTERNAL DRIVE £59.99
MAINS SUPPRESSOR BLOCK 4WAY £12.99
UPGRADED A500 POWER PACK £39.99

AMIGA REPAIR SERVICE
 FIXED PRICE REPAIRS FROM £4.99
 (Excludes keyboard, psu & disk drive. We reserve the right to decline uneconomic repairs)

EXTERNAL DRIVE POWER SUPPLY £29.99

This new product powers up to 3 external Amiga floppy disk drives. By relieving the Amiga power supply of this burden (for which it was not designed), you will increase its reliability considerably. Just plugs straight in between first floppy drive & Amiga's external drive connector.

ACCELERATORS & EMULATORS

GVP G-FORCE 68030 ACCLIR from £599.99
GVP G-FORCE 68040 (28MHz) ACCLIR £1999
PC286 EMULATOR FOR GVP DRIVES £249.99
KCS PC CARD v3 + DOS4 £204.99
KCS WITHOUT MSDOS £189.99
KCS 2000 PC BOARD ADAPTOR £64.99
AT ONCE PLUS 16MHz PC EMULATOR £219.99
IMPACT VISION IV24 VIDEO CARD £154.99
A1500/2000 ADAPTOR FOR ABOVE £39.99
 ALL GVP PRODUCTS AVAILABLE

1CD FLICKER FREE VIDEO 2

* GETS RID OF IRRITATING JITTER
 * WORKS WITH MOST VGA MONITORS
 * INTERLACED OR NON-INTERLACED
 * HANDLES ALL AMIGA VIDEO MODES
 * FOR A500/500+ /1500/2000
 * OVERSCAN CAPABILITY = BIG DISPLAY
 * WORKS WITH ALL AMIGA PROGRAMS
 * NO VISIBLE SCAN LINES
 FLICKER FREE VIDEO 2 ONLY £229.99
 14" VGA HIRES MONITOR £249.99

PRINTER PORT EXPANDER

These units enable you to connect up to 4 peripherals to your Amiga's printer port. They come complete with free Amiga connecting lead worth £10.99. Filled with 17 sockets as on the Amiga so your peripherals just plug straight in.
 2way - £24.99; 3way - £27.99; 4way - £29.99.
 2 to 4 way Printer Shares also available.

BACKUP UTILITIES

X COPY PRO £33.99

Latest version - complete with Cyclone external drive adaptor.

CYCLONE ADAPTOR £12.99

AMI SUPERCARD £34.99

ACTION REPLAY FOR A500 £57.99

ACTION REPLAY FOR 2000 £67.99

NB. Making backups without the permission of the copyright holder is illegal.

'ULTIMATE' PRO ANALOGUE JOYSTICK.

PRESET X & Y TRIMMERS, MICROSWITCH FIRE BUTTONS; AUTOFIRE (where supported by games) - SUPERB & ONLY £19.99

NAKSHA MOUSE + OPTERN STEALTH £24.99

SQUICK MOUSE™ £15.99

BUDGET REPLACEMENT MOUSE £15.99

OPTICAL MOUSE £37.99

DELTA 3A ANALOGUE JOYSTICK £14.99

GRAVIS MOUSE STICK CONTROLLER £65.99

MOUSE MAT £3.99

MOUSE HOLDER £1.99

ZIPSTICK AUTOFIRE £13.99

SPEEDKING AUTOFIRE £11.99

MOUSE/JOYSTICK PORT SWITCH £12.99

* Has sockets for mouse & joystick.

* Push button on selects mouse or joystick.

* Uses no power unlike other types.

* Saves wear & tear on mouse port.

BOOKS & BLANK DISKS

* = PRICE INCLUDES PROGRAM DISK

AMIGA FOR BEGINNERS £14.99

AMIGA BASIC INSIDE & OUT £21.99

AMIGA DISK DRIVES 1 & 2 £27.95

AMIGA DOS INSIDE OUT £22.99

AMIGA PRINTERS 1 & 2 £31.95

AMIGA DESKTOP VIDEO £23.95

MAKING MUSIC ON AMIGA £27.99

AMIGA GRAPHICS 1 & 2 £31.95

AMIGA C FOR BEGINNERS £17.99

MAPPING THE AMIGA £20.95

ADVANCED AMIGA BASIC £16.95

USING AREX ON THE AMIGA £26.99

FIRST BOOK OF THE AMIGA £16.95

USING DELUXE PAINT £19.95

THE IMAGINE COMPANION £24.95

USING IMAGINE 2 £24.95

HARDWARE REF MANUAL £21.95

AMIGA USER INTERFACE GUIDE £18.99

AMIGA ROM KERNEL REFERENCE BOOKS - 3

A VAILABLE - LATEST EDITIONS each £28.95

VIDIA PAGESREAM GUIDE £4.95

LITTLE BLUE WORKBENCH 2 BOOK £14.95

TDK 3.5" DISKS - BRANDED PK OF 10 £8.99

150 CAPACITY STACKABLE POSSO BOX £19.99

100 CAPACITY 3.5" DISK BOX £8.99

40/50 CAPACITY 3.5" DISK BOX £6.99

* THESE ARE LOCKABLE, TINTED LID, ANTI-STATIC

TRILOGIC PRODUCTS

PRO MIDI INTERFACE 2

Our unique 5 port Midi interface 2 has In, Out & Thru sockets plus two additional switchable sockets which you use as either Out or Thru sockets - very useful. Compatible with all Amigas & Amiga software. **NOW ONLY £24.99**

Extra Midi lead 1.2m £1.99

Extra Midi lead 3m £3.99

STEREO SAMPLER 2

Our Superb sounding 'STEREO SAMPLER 2' uses a state of the art A/D chip which samples so fast, it captures every detail of the sound. Sampling rates in excess of 100,000 samples per second are possible (software dependant)! External control knob enables quick setting of correct signal level. Superb Free sampling software offers adjustable sampling rates and much much more. Fully compatible with all popular sampling software. **ONLY £34.99 COMPLETE.**

SUPERFI 2 STEREO SYSTEM

We've looked high & low for a POWERFUL, QUALITY STEREO speaker system for use with Computers, Keyboards, Stereo VCRs, Satellite Systems & Walkmans. Now we've found one - It's a 20 watt per channel, directly mains powered (no separate psu), 3 way speaker system. It has Bass, Treble & Volume controls & comes complete with connecting leads. Freq response: 32Hz-20KHz from the heavy Bass Reflex ported enclosures. Size approx 137"210"125mm; colour: Black. **ONLY £34.99 COMPLETE**

TOP AMIGA PROGRAMS

ADVANTAGE £69.99
AMI ALIGNMENT £42.99
AMIBACK £44.99
AMAS 2 £89.99
AMOS £34.99
AMOS 3D £25.99
AMOS COMPILER £22.99
ART DEPARTMENT PRO £149.99
AUDITION 4 £38.99
AUDIOMASTER 4 £54.99
AUDIO ENGINEER £179.99
BARS & PIPES £109.99
BBC EMULATOR £30.99
BROADCAST TITLER 2 £169.99
CAN DO 1.6 £69.99
CASH BOOK CONTROLLER £54.99
COMPENDIUM 6 £29.99
CROSS DOS £27.99
DAY BY DAY £23.99
DELUXE PAINT 4.33 £64.99
DELUXE MUSIC £49.99
DELUXE VIDEO 3 £74.99
DEVPAK 3 £51.99
DC CALC £29.99
DIRECTORY OPUS LATEST V £29.99
DISK MASTER £39.99
DISK MASTER 2 £49.99
OR TIGER CUB £79.99
E TYPE £29.99
EXPERT DRAW £49.99
EXPERT 4D JNR £37.99
EASY AMOS £26.99
EXCELLENCE £59.99
EXOTIC CARS FOR IMAGINE £34.99
FLOW v3.0 £54.99
GB ROUTE PLUS £59.99
GOLD DISK OFFICE £99.99
HIGH SPEED PASCAL £74.99
HISOFT BASIC £49.99
HOME ACCOUNTS 2 £39.99
HOMEBASE £24.99
HOTLINKS £53.99
HYPERBOOK £44.99
IMAGINE 2 £199.99
IMAGINE OBJECTS DISK £84.99
INTROCAD PLUS £74.99
KINDWORDS 3 £39.99
LATTICE C v5/SAS C £169.99
MACRO 68000 ASSEMBLER £39.99
MAILSHOT PLUS £39.99
MAXIPLAN V4 £99.99
MEDIA SHOW £54.99
MEGAMIX MASTER £29.99
MUSIC X v1.1 £54.99
MUSIC X JUNIOR £39.99
PAGESTAMP 2.2 £159.99
PAGESETTER 2 £44.99
PEN PAL £54.99
PERSONAL TAX PLANNER £29.99
PERSONAL FINANCE MANG £24.99
PROFESSIONAL CALC £139.99
PRODATA £75.99
PROFESSIONAL DRAW V3 £89.99
PROFESSIONAL PAGE 3 £169.99
PROTEXT v5.52 £99.99
PROWRITE v3.2 £89.99
QUARTERBACK £44.99
QUARTERBACK TOOLS £49.99
QUARTET £37.99
REAL 3D BEGINNERS £79.99
SCALA 500 £74.99
SCALA PROFESSIONAL £199.99
SCULPT 3D XL £109.99
SCULPT ANIMATE 4D JNR £79.99
SONIX £34.99
STEREO MASTER £29.99
SUPERJAM £69.99
SUPERBASE PROF 4 £199.99
SUPERPLAN £69.99
SYSTEM 3e £59.99
TAKE 2 £39.99
TECHNOSOUND £29.99
TOPFORM £59.99
TRANSWRITE £28.99
TURBOPRINT PRO £37.99
TV SHOW £57.99
VIDEO EFFECTS 3D £99.99
VIDEOSCAPE 3D £59.99
VIDEO DIRECTOR £109.99
VOYAGER 1.1 £69.99
WORD PERFECT 4.1 £159.99
WORDWORTH 1.1 £89.99
XCAD 2000 £109.99
3D PROFESSIONAL £149.99

DUST COVERS

SLAN TYPE KEYBOARD SKIN.
 Waterproof & moulded to fit snugly over each key, but flexible enough to type thru.
AMIGA 500, 500+, 1500, 2000 £12.99
 (State which when ordering please)
A500/A500+ ANTISTATIC DUST COVER £4.99
1500/2000 D COVER - 2 PIECE £12.99
1500/2000 KEYBOARD COVER £3.99
EXTERNAL 3.5" DRIVE COVER £3.99
 LOTS MORE TYPES IN STOCK



Commodore dealer since 1984

**UNIT 1,
 253 NEW WORKS RD,
 BRADFORD, BD12 0QP**

**SALES:
 0274-691115**

HOW TO ORDER

ALL PRICES INCLUDE VAT

FAST, RETURN OF POST MAILORDER SERVICE*

Order by phone using your ACCESS, VISA, SWITCH, CONNECT or AMERICAN EXPRESS CARD.

Order by Mail - sending cheque, bankers draft or postal orders made payable to TRILOGIC.

Please add part postage & packing of £1.00 to orders under £100 or £2.00 to orders over £100.

*Optional 48hr delivery - add £3.50. Overnight carrier - add £5.50. (May take longer for outlying, remoter areas. (Uk Mainland only). Saturday delivery - add £12.00. Datapost service available P.O.A.

EXPORT ORDERS WELCOME. No vat - deduct 171/2%, but add carriage at cost.

Open Mon-Fri 8 till 6, Sat 8-4pm. *For orders received before 3pm & subject to goods being in stock.

Callers welcome - we're easy to find, just 1.5 miles from the M62. Easy parking.

Leave M62 at junction 26, take A638 to Bradford, uphill, after about 1.5 miles & just past the park, turn left once over a railway bridge. After 1/4 mile, look for us on left opposite a PO mail box. E&OE

AMIGA SUPERMARKET SALES: 0274 691115

PAY BY: ACCESS VISA
CONNECT SWITCH DELTA
AMERICAN EXPRESS

LOW COST EXTENDED WARRANTIES
For only £44.99 your Amiga can be covered against repairs due to breakdown & ACCIDENTS for three years. Covers ALL parts & labour. Must be taken out within 30 days of purchase.

AMIGA 600 £289.99
AMIGA 600HD £469.99 **NEW LOW PRICE**

- 1 MEG RAM
 - 3.5" DISK DRIVE
 - WORKBENCH 2
 - BUILT IN TV MODULATOR
 - 20 MEG HARD DRIVE (600HD ONLY)
 - PLUS GAMES PACK (files vary)
- ACCESSORIES PACK £29.99**
ADD £45 FOR 2MEG VERSION
- 12 MONTHS ON-SITE WARRANTY**

AMIGA 500 PLUS £349.99
2 MEG VERSION £389.99

- BUILT-IN DISK DRIVE
- 1 MEG RAM
- MOUSE
- TV MODULATOR
- WORKBENCH 2
- BUILT-IN CLOCK
- LEMMINGS
- THE SIMPSONS
- CAPTAIN PLANET
- DELUXE PLANT 3
- EXTENDED WARRANTIES AVAILABLE

LIMITED STOCKS

AMIGA 500 1.3 only £289.99

- BUILT-IN DISK DRIVE
 - 512K RAM
 - MOUSE
 - TV MODULATOR
 - WORKBENCH 1.3
- We can supply & fit our Rom Switch complete with 2.04 rom for just £69.99 without invalidating your warranty.

PHILIPS CM 8833MK2

- with F19 & On site warranty
- OFFICIAL UK MODEL
- NOW ONLY £219.99
- 14" SCREEN
- STEREO SOUND
- RGB & COMPOSITE INPUTS
- FREE CONNECTING LEADS
- DUST COVER £7.99

COMMODORE HHS

- LATEST MODEL**
NOW ONLY £239.99
- 14" ANTIGLARE SCREEN
 - GREEN SCREEN SWITCH
 - STEREO SOUND
 - RGB & COMPOSITE INPUTS
 - FREE CONNECTING LEADS
 - DUST COVER £7.99

GOLDSTAR MONITOR/TV

- 14" SCREEN
 - FULL REMOTE CONTROL
 - SCART SOCKET (rgb input)
 - FREE AMIGA LEAD
 - SUPERB PICTURE
 - DUST COVER £7.99
- ONLY £179.99**

ONLY £229.99 with SUPERFET 2 STEREO SYSTEM

AMIGA 1500 Wkbench 2 £559.99

- 1 MEG RAM
 - TWIN 3.5" DRIVES
 - WORKBENCH 2
- Includes software pack comprising: DPaint 3, Home Accounts, The Works, El Toki, Pazzie & 'Get the Most from Your Amiga'.
- AMIGA 1500/200 ADDONS**
- 8 MEG MEMORY CARD (unpop) £79.99
 - 1 meg 79 SIMMs 2, 4, or 8 required £24.99
 - GVF 52MEG HARD DRIVE £279.99
 - GVF 120MEG HARD DRIVE £419.99

MONITOR LEADS & ACCESSORIES

- ALL FOR TV, WITH SCART SOCKET (Not for VCRs) £13.99
- Including Sony, Philips, Ferguson, Hitachi, Toshiba, Mitsubishi etc
- AL1 for Ferguson M601/M603/M605 with 9 pin Din socket £12.99
- AL4 for Hitachi/Granada sets with 7 pin Din RGB input £12.99
- AL6 for Amstrad CPC164/1628 monitor (with no sound) £12.99
- AL16 for new Amstrad CPC stereo monitor £12.99
- AL7 for 1003/1004/8033 with 9 pin Din socket £14.99
- AL11 with 9 pin D plug for multi-sync monitors £12.99
- AL11 with 9 pin D plug for multi-sync monitors £13.99
- AL13 with 15 pin 3 row plug for multi-sync monitors £13.99
- FLICKER FIXER LEAD - 9 plug to 15 way 3 row plug £13.99

ALL LEADS INCLUDE AUDIO LEAD WHERE APPLICABLE

- MODULATOR EXTENSION LEAD eliminates overshoot £16.99
 - MONITOR PLINTH 1 fits over Amiga & supports monitor £23.99
 - MONITOR PLINTH 2 fits above plus shelf under monitor £23.99
 - DELUXE MONITOR STATION fits over Amiga £69.99
- Includes overall dust cover, mouse mat & joystick/mouse extension sockets. Both plinths have cut out for drive access & holes for mouse/joystick extension sockets. Monitor Station has cut out for hard drive as well.
- MOUSE & JOYSTICK EXTENSION KIT FOR PLINTH 1 & 2 £7.99 pair
 - MONITOR TILT/SWIVEL BASE for up to 14" monitors/tvs £12.99
 - SCART SWITCH - dual scart inputs for most TVs £18.99
- Enables any two scart leads to be connected to any tv with one scart socket. Fully switched. Inputs can be used for computers or VCRs etc.

EXTERNAL DISK DRIVES

- ROCLITE RE102C SLIMLINE DRIVE £56.99**
 - CUMANA CAX 354 3.5" DRIVE £59.99**
- All drives feature thru port & disable switch.
- Using more than one external drive? - you need our External drive power unit - see opposite page for details.

PRINTERS

MONO COLOUR

- CITIZEN 120D+ now down in price £129.99 Budget buy.**
- Good budget 9 pin, with tractor & friction feeds.
- CITIZEN SWIFT 9 £169.99 £189.99**
- 192cps draft, 48cps NLQ, 4 fonts. Friction & tractor feeds. Paper park. Low cost ribbons. 2yr warranty.
- CITIZEN SWIFT 9X B/W wide carriage £319.99**
- CITIZEN SWIFT 224D COLOUR £224.99 £239.99**
- 192cps draft, 64cps NLQ, a simplified version of the Swift 24, similar print quality.
- CITIZEN SWIFT 24E £264.99 £289.99**
- The What Micro Best buy budget 24 pin printer. New 'E' model is even better - 216cps/72cps NLQ
- CITIZEN SWIFT 24X wide carriage £414.99**
- CITIZEN PROJECT INKJET PRINTER £399.99**
- 6ppm, 300dpi (400dpi with extra ram) A4 paper.
- RICOH LP1200 LASER PRINTER £799.99**
- 6ppm, 300dpi (400dpi with extra ram) A4 paper.
- SEIKOSHA SP1900 budget printer £124.99**
- FREE DRIVER DISK WITH ALL CITIZEN PRINTERS
- Printer lead just £3.99 extra with all printers.

ASK ABOUT THE NEW CITIZEN 240 RANGE

PRINTER LEADS & ACCESSORIES

- AMP1 1.5m PRINTER LEAD £9.99
 - AMP2 3m PRINTER LEAD £12.99
 - AMP3 5m PRINTER LEAD £16.99
 - MF1 25WAY M-F LEAD 2m £10.99
 - MM1 25WAY M-M LEAD 2m £10.99
 - MM2 36W M-M LEAD 2m £12.99
 - PRINTER SHARER 2 WAY £21.99 inc lead
 - 2 PIECE PRINTER STAND £7.99
 - UNIVERSAL PRINTER STAND £12.99 for all 80 column printers - metal frame type.
 - 1ACROSS LABELS 3.5"x1.5" £7.99/pack of 1000
 - FANFOLD PAPER 11"x9.5" £21.99/box of 2000
 - MICROPERFORATED - CLEAN TEAR OFF
 - MONO RIBBONS £4.99 each for: CITIZEN 120D/SWIFT 9/24/224/124; STARLC10/20/LC15/24-10/NB24/10/NX1000; AMSTRAD DMP2000/3000/3150/4000/PCW8256; BROTHER HR1/M1009/M1224; COMMODORE MPS801/803; OKI 1021/92/320/32; PANASONIC KXP1081/1090; SHINWA CP80; EPSON MX70/RX80/100
 - COLOUR RIBBONS ALL £15.99 each for: SWIFT 9/24/224 LC10/LC20/LC30/LC24-200. (Citizen wide carriage ribbons - POA)
 - PRINTER DUST COVERS £7.99
- For popular Citizen & Star printers - please state printer model when ordering.

MEMORY UPGRADES

- AMIGA 500 PLUS upgrade TO 2 MEGS £39.99**
- Just plugs in. No soldering. Warranty unaffected. Gives you 2 megs in total.
- A500 / 500+ 1/2meg without clock £21.99**
- A500 / 500+ 1/2meg upgrade with clock £24.99**
- AMIGA 600 1meg + clock (unpopulated) £29.99**
- AMIGA 600 1meg + clock complete £49.99**
- A500 & 500+ 4 MEG MEMORY UPGRADES THE ONLY WAY TO GET MORE FAST MEM***
- BASEBOARD PLUS unpopulated £79.99**
- BASEBOARD PLUS with 1MEG £99.99**
- BASEBOARD PLUS with 2MEG £129.99**
- BASEBOARD PLUS with 4 MEG(max) £179.99**
- Uses low cost 256"4 D rams - special offer 1meg for £30.00
- *By internal fitting - invalidates warranty unless fitted by us. Fitting charge £10.00 plus postage. Also available for Amiga 500 1.3. State machine when ordering.
- 15MEG A500 UPGRADE fully populated ONLY £59.99**
- AMIGA 1500/2000 8 MEG MEMORY CARO £79.99**

GVP HARD DRIVES

- GVP SERIES II HD8+ 52 Meg now only £359.99**
- GVP SERIES II HD8+ 60 Meg now only £359.99**
- GVP SERIES II HD8+ 120meg now only £479.99**
- GVP SERIES II HC8+ 52meg now only £279.99**
- GVP SERIES II HC8+ 120meg now only £419.99**
- 1MEG SIMMS FOR GVP (4meg max) each £24.99
- 4MEG SIMMS FOR GVP each £89.99
- GVP A330 68030 (40MHz) + 52M HARO DRIVE, 1 MEG RAM EXPANDABLE TO 8 MEGS. A3000 PERFORMANCE £729.99**

COMMODORE A590+ & A590 UPGRADES

- A590+ (no ram) 20meg drive. £279.99
 - A590 52meg QUANTUM SCSI upgrade - easy to fit £289.99
 - A590 120meg QUANTUM SCSI upgrade - easy to fit £349.99
 - A590 5meg NEC SCSI upgrade - easy to fit £189.99
 - A590 120meg NEC SCSI upgrade - easy to fit £299.99
 - A590 MEMORY CHIPS £24.99/MEG
 - A590 2ND DRIVE HOUSING & SCSI CABLE £49.99
- Comprises steel case, cable & power socket. Can use A590 psu.

- CUMANA COM301 ST506 DRIVE INTERFACE £59.99**
- Feature 1/2 meg ram & battery backed clock, plus ST506 hard drive interface for old PC drives. (Cables & power supply required)

©TRILOGIC 1992. Prices charged as then current on the day you order - occasionally, some may have changed either way since this advertisement was compiled (10/92)

ORDERS FROM PLCs, LOCAL GOVERNMENT & EDUCATIONAL ESTABLISHMENTS WELCOME.

DATAFLYER EXPRESS AMIGA 500/500+ HARD DRIVE INTERFACES

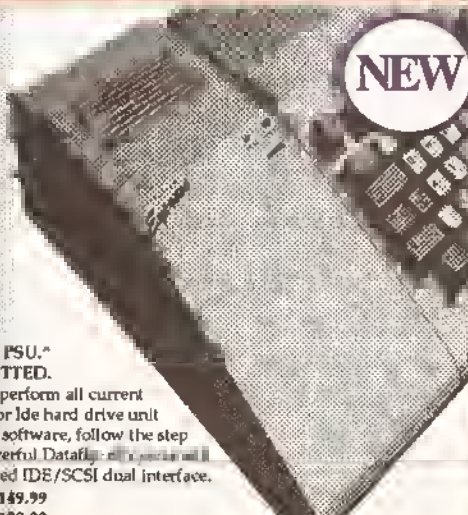
- SUPPORTS UPTO 7 SCSI DRIVES*
- SUPPORTS 2 IDE DRIVES*
- SOCKETS FOR 8 MEGS OF FAST RAM

- *NEW SLIMLINE COMPACT ALLOY CASE
- *HOLDS 1 IDE OR 1 SCSI SLIMLINE DRIVES
- *AUTOBOOTING
- *AUTOINSTALL SOFTWARE - SO EASY TO USE
- *MOUSE BUTTON DEFEATABLE ON POWER UP
- *EXTERNAL SCSI CONNECTOR FOR ADDITIONAL DRIVES
- *SYQUEST COMPATIBLE
- *CD ROM COMPATIBLE
- *AMAXII COMPATIBLE
- *SUPPORTS RIGID DISK BLOCK READS
- *KCS COMPATIBLE
- *FES COMPATIBLE

OPTIONAL EXTERNAL POWER USING STANDARD AMIGA PSU.*
ALSO AVAILABLE COMPLETE WITH IDE OR SCSI DRIVE FITTED.

This brand new, Dataflyer Hard Drive Interface is intended to outperform all current Amiga 500 & 500 Plus Hard Drive interfaces. Simply fit your Scsi or Ide hard drive unit into the case, (mounting hardware supplied), load the Autelinstall software, follow the step by step on screen instructions & within minutes you have a Fast & Powerful Dataflyer ready to use. Both Ide & Scsi types can be upgraded to combined IDE/SCSI dual interface.

- DATAFLYER EXPRESS (IDE VERSION) £149.99**
- DATAFLYER EXPRESS (SCSI VERSION) £159.99**
- DATAFLYER EXPRESS IDE & SCSI VERSION £169.99**
- 1 MEG SIMMS 2, 4, OR 8 REQUIRED £24.99
- *May be required for fully populated memory version. PSU £34.99



NEW

*DEPENDENT UPON VERSION - three versions are available - IDE ONLY, SCSI ONLY, or dual IDE/SCSI. Ide or Scsi versions are user upgradable to dual type.

This month sees Wilf Rees taking a second look at using your Amiga to exert control, and talking to a friendly alien called ADI

ROBOSHOP 2



Is this the future shape of your Amiga? It could be...

Last month I looked at how we can use the external ports of the Amiga to begin controlling assorted devices. To rationalise the understanding of control, I have based all my experiments on the Switchsoft I/O port, and its associated accessories. I aim to continue the same path this month, with a look at more sophisticated applications to give advice on how you can develop your understanding of 'control', and work towards more advanced applications.

ROBO SPEAK

First, a few words about robotics. The word robot was first penned in the 1920s in a play by the Czech writer Karel Capek. It was about a scientist who built machines called 'robots' from the Czech word 'robota' meaning slave-like work.

Unfortunately, at the end of this play, the robots kill their human creators to take over the world!

The potential of computers makes it likely that more and more jobs will become automated in the future, so an understanding of robotics is a valuable asset.

Controlling any device from a computer requires commands, and these can be sent in various forms. Last month, I explained how most of the Basic languages are supported by the Switchsoft port, and I will be continuing in this format. The basic principle is that the computer can make decisions on when to turn on motors, and for how long. The Amiga can also base those decisions on information it receives from sensors.

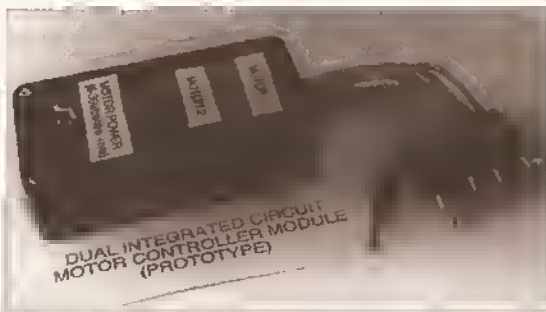
BUILD YOUR OWN

The mobile robot can vary in size. Generally, the smaller ones are called buggles, and are attached to the computer by an umbilical cable. Some have on-board computers much smaller than Amigas! Personal computers like the Amiga have made robot building much easier. In the early days of robotics, the only way to implement decision-making ability by the robot, was by using electronic components. Now all the control algorithms can be implemented by software on a disk.

An Amiga-based walking android is a little ambitious to start with. At this stage, you don't need to incorporate the Amiga on-board. Start off with an umbilical connection, but maybe leave space for the Amiga for later developments.

Decide on the size and shape of your robot and which materials to use for construction. Plywood might sound low-tech, but it's one of the best materials to use.

The best shape for a robot is



The dual integrated circuit motor controller module will make future building and driving of robots easier

cylindrical. The reason for this is that a very tight turning circle is a great advantage. If the robot encounters an obstacle, it can reverse and turn virtually on the spot to change direction. When turning, you don't want one of the corners to knock over your mum's prize Ming vase, or knock lumps out of an unsuspecting dozing dog.

It is of course rather difficult to produce a circle in plywood, so a hexagonal cross section is a good

compromise, something like a Dalek, in fact. You should allow for computer, battery, wheels and extra sensory circuitry. One of the slides should incorporate a hinged door.

WHEELIES AND CATERPILLARS

Having designed the general shape of the robot, you need to think about mobility. There are many possibilities for producing movement. You can use wheels or tracks. You might consider legs, but this is a complicated option best left for 'mark 3 or 4'.

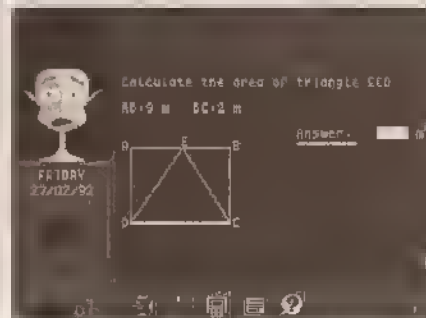
Wheels are the easiest option, and the best permutation is three. Two wheels, and the robot falls over, four, and manoeuvring requires three-point turns. Using three wheels means we can have a motor attached to two of the wheels, and



ADI is an alien whose mission in life is to bring the joys of learning to everyone willing to follow his happy-go-lucky way of addressing the subjects contained in this integrated learning package. The range covers English, Maths and French for ages 11 to 15. The packages have been linked to the attainment targets in the National Curriculum.

The packages include a clock, a personal diary, a notebook, and a high score table. Icons along the bottom of the screen provide options for Help, Back One, Game, Forward One, Tools, and Start Application.

ADI introduces himself, and goes through the usual routine of asking your name and age to ensure politeness of address on



Get to grips with geometry with help from ADI and his maths package

subsequent encounters, and to record your performance against accepted attainment levels. His somewhat whimsical face changes expression as he reacts to your input, and continually supports the passage through the programs with advice and support.

Work, Chat or Play are offered as possibilities. Work begins the actual

! WARNING

Danger electricity kills! Unless you are absolutely sure about what you are doing, seek advice from an expert electrician before attempting any experiments in either of the two articles on robotics.

have one wheel as a jockey wheel. Turning simply requires reversed power on two of the wheels providing minimum turning circle – the software instructions are easy.

The two motors will need to operate off 12 volts (car battery) and be connected to a reduction gearbox. Without the gearbox, the speed of the axle would be too fast. The gearbox reduces the axle speed and increases the torque giving greater power. Suitable wheels, with rubber treads, are connected to the output shaft to produce drive.

It is advisable to contact Switchsoft which will advise on suitable components for the construction, or you can go along to a scrapyards, buy a couple of windscreen wiper motors. These work off 12 volts, and have a gearbox incorporated in them. Check they have plenty of torque, and can be reversed by switching the polarity. Supermarket trolleys are a brilliant source of wheels for the jockey wheel, but go and ask for a damaged one, don't inadvertently push it all the way home!

NEXT STOP MARVIN

The Switchsoft motor controller module is ideal for smaller buggies, but would probably not cope with the high power switching necessary for a larger robot. The Relay module is capable of this degree of power. There are options for employing relays. A suitable combination is 2 double pole relays and one single pole relay. The single pole relay (as supplied in the Sensor and Control Experiment Kit) is used to switch on both motors. The two double pole relays are used to select forward and

reverse for each motor. Alternatively you could use 5 single pole relay modules. Either of these options would use only 3 channels on the Switchsoft I/O port. You could use an additional relay for 'breaking'.

If the two wires on the motor are shorted together, the motor is made to stop suddenly.

Initially we are looking at driving

the robot from an umbilical cable, but it is possible to include the Amiga inside the robot, and provide power to the Amiga from a battery source.

The Amiga needs 5, and +12volts and -12 volts.

This can be done by using the same battery as supplies the power to the wheels or by having a separate battery. It is safer to use a separate battery because the motors driving the wheels produce power 'spikes', and these could interfere with the power to the Amiga. A circuit will need to be built to provide the power for the Amiga, or, a device to change 12volts DC into 240volts AC can be used.

TALKING TO YOUR ROBOT

Assuming you have your robot connected to a Switchsoft I/O port and are using AMOS, a few tips on programming your robot to behave. The commands are almost the same for other versions of BASIC, such as HiSoft, GFA or Amiga BASIC. Let's

assume you have a single pole relay module connected to channel 1 on the port and a double pole (or 2 single pole relays) connected to channels 2 and 3. You'll need the I/O port disk supplied with the Sensor and Control Kit (or available separately for £4). This disk has subroutines supplied with it which are required by the following lines...



Good old Lego gets things under control. This is a robot arm which can pick up and swivel on one axis, an excellent building medium to develop ideas for bigger projects

To go forward:

```
TURNON[1]
WAIT 150
TURNOFF[1]
```

This will make the robot move forward for 3 seconds then stop. If you change the second line to WAIT[50] it will be switched on for only 1 second. To go backwards:

```
TURNON[2]
TURNON[3]
TURNON[1]
WAIT 100
ALLOFF
```

To turn to the right:

```
TURNON[2]
TURNON[1]
WAIT 50
ALLOFF
```

To turn to the left, change line 1 above to TURNON[3]. To rotate round and round on the spot, change line 3 above to WAIT 1000 (20 seconds).

If you are using a Basic other than AMOS, you do not have a wait command. But there might be PAUSE, so use:

```
FOR d=1 to 2000
NEXT d
```

Building upon these subroutines, you can create a program enabling your robot to follow a sequence of patterns. Try, for example, to place your robot in a corner, and write a program which instructs it to follow a path across the room, around a

chair, then out of a door. If you can manage to make it go to the kitchen and make coffee and bring it to you, send me the program!

MAKING SENSE OF IT ALL

Things get really exciting with the addition of sensors. There are all kinds of sensors which can be plugged into the Switchsoft I/O Port. In the Temperature and Light Kit there is a photo sensor. Two of these attached to the front of the robot can make it follow a black line on a white floor. The photo sensors should be connected to the analogue inputs. The program for this follows:

```
LINE FOLLOWER.....
FOR X=1 TO 1000
TURNON[1]
ANALOG1
IF PARAM>0 THEN TURNON[2]:
WAIT 30 TURNOFF[2]
ANALOG2
IF PARAM>0 THEN TURNON[3]:
WAIT 30: TURNOFF[3]
NEXT X
ALLOFF
```

Other types of sensors can be used. A microswitch connected to the I/O port can be used as an impact sensor which would register if the robot bumped into something. Or, there are infra-red "proximity" detectors which would stop the robot approximately 10cm before impact.

Using a light sensor to detect the arrival of evening can tell the robot to close curtains, turn on the lights and switch on the hi-fi with sampled dog barking and provide an effective burglar deterrent.

Andrew Mcowan of Switchsoft is obviously an enthusiast and will offer all kinds of brilliant advice. Any of the equipment detailed below would make the ideal gift for anyone who wants to use an Amiga seriously. **AS**

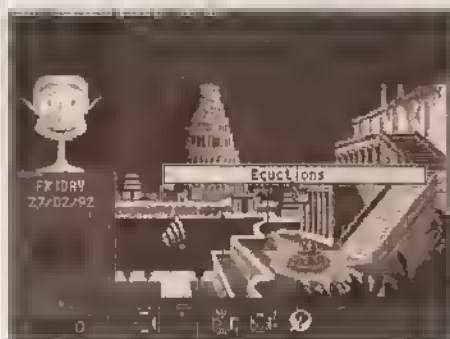
educational application, and this demands a security input from a large coloured grid, supplied with the package. I spent quite a long time with the 11 to 12 Maths and the 12 to 13 English.

I was fascinated by the way in which Europress has cleverly used the little alien, and made the process of error correction necessary, but still fun. Correct answers cause a character to tear across the screen and jump a hurdle. Incorrect replies and he goes head over heels.

CONCLUSION

This is innovative software which breaks new ground in integrating the learning process. It has a huge database of questions, all very relevant to the age group concerned.

Definitely 5 star. One word of caution, I did experience difficulty initially as ADI refused to load until I switched off my GVP 68030 accelerator card.



The friendly face of ADI guides you through the maze of mathematics

SHOPPING LIST

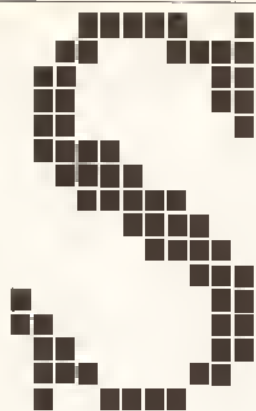
ADI Maths 11/12,12/13,13/14,14/15
ADI English 11/12,12/13,13/14,14/15
ADI French 11/12,12/13,13/14,14/15
All priced at.....£25.99

Available from:
Europress Software
☎ 0625 859333

SHOPPING LIST

Input/Output Port	£27.95
Sensor & Control	£27.95
Experiment Kit	
Temperature & Light Exp Kit	£11.95
Motor with Gearbox	£11.90
Buggy Kit	£39.95
Single Pole Relay	£9.95
Double Pole Relay	£14.70
Gears & Pulleys pack	£14.50
Wheels & Axles pack	£5.95
Ramrod electric RAM	£25.40
Economy Motorised gearbox	£5.95
Mains Controller	£24.95
Dual Motor control module	£17.95

Available from: Switchsoft
Dept. AS1092 26, Ridgeway,
Darlington DL3 0SF
☎ 0325 464423

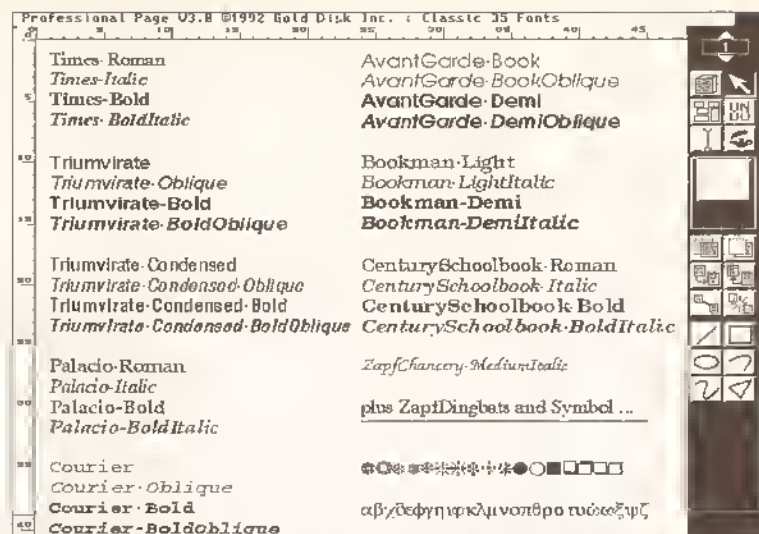


'bitmapped'



'outline'

Bitmapped characters are constructed from a rectangular matrix of black and not black dots; enlarging them introduces the 'jaggles', shrinking them results in the loss of some of the data. Outline characters are defined by control points and mathematical equations that describe the curves; no matter how much you shrink or enlarge them, they always keep their shape



The 'classic 35' typefaces, as found in most PostScript printers and the Compugraphic Outline Fonts pack, are composed of different styles of nine type families, plus dingbats and symbols type-faces. Triumvirate is the same as Helvetica, Palatio is the same as Palatino, CenturySchoolbook is the same as NewCentury Schoolbook. The Outline Fonts names are changed because the names of some typefaces are registered trade marks

In the final part of his tutorial on typography, Jeff Walker tells you all you'll probably ever need to know about fonts

Reverting to type

As desktop publishing has become cheaper and more accessible to the home user and the semi-professional, the mystique and terminology surrounding the subject of computerised typefaces has grown into a dark tower of confusion and misconceptions.

Even some so-called experts will go "Um..." when asked certain questions.

The purpose of this article is to knock some bricks out of that dark tower and bring it tumbling down, to explain the terminology and the way different computerised typefaces work. Armed with this new understanding, you will be able to talk confidently on the subject to the person sitting next to you on the bus, you'll be able to read advanced books and articles on DTP without getting headaches, and you'll not feel like a complete prat when the person behind the counter down the output bureau throws a mouthful of jargon at you. In fact you'll be able to smile and throw some jargon back, resplendent in the knowledge that you probably understood what they said better than they themselves did.

The first thing we must clear up is that when desktop publishing people say "fonts", they usually mean "typefaces". Remember from

last month? A font is a particular typeface printed in a particular size and style – eg Times-Italic 24pt. Times is not a font, it's a type family. Times-Italic is not a font, it is a typeface. Times-Italic 24pt is a font.

Never mind what the advert says or what the package is called, when you buy a disk of 'fonts' you are actually buying a disk of typefaces. Unless they are "bitmapped fonts", which is where the story begins...

NOT FLEXIBLE

Bitmapped fonts are the simplest and least flexible variety of computer typefaces. The word "bitmapped" is an awful piece of jargon borrowed from the programming world; as far as bitmapped fonts are concerned, it means that individual characters are formed by arranging a series of dots inside a rectangular matrix to form a "map" of black and not-black dots. It's called a bitmap because each dot in the matrix requires one "bit" of computer memory.

You've probably got a dot-matrix printer. It's called dot-matrix because the characters it prints are formed in the way described above. If it helps, think of "bitmapped" as meaning dot-matrix.

The dot-matrix or "bitmap" for the computer generated characters can be as big as is required, but the

larger the bitmap, the more memory each character takes up.

The advantage of bitmapped fonts is that they can be rendered quickly on-screen using the simple method of "one dot in the matrix equals one pixel on the screen". There's no calculating involved, all the computer needs to do is copy the data for the character from storage memory to screen memory – read-write-plot, a character on the screen in the tiniest fraction of a second. For this reason bitmapped fonts are often referred to as "screen" fonts.

But there's a snag. (Isn't there always?) Bitmapped fonts can be enlarged only by a method called

"pixel replication". All this term means is that every pixel is multiplied by the same number to produce a larger font. To give a simple example: say we wanted a character to be twice as wide and twice as high – every pixel in the matrix would have to be multiplied into a group of pixels two pixels wide by two pixels high. And what have we got? Yup, we've got the jaggles!

You can see pixel replication for yourself by using *Deluxe Paint* to type a letter on to the screen, cutting it out as a brush and then pressing Shift-H to keep doubling the brush's size. After just a few doublings the character becomes incredibly ugly.

JARGON BUSTING • JARGON BUST

Ascender – The vertical stroke above the x-height in letters like b h k.

Baseline – The (imaginary) line on which all upper case and lower case letters stand.

Black Letter – Type in the Germanic style, often mistakenly referred to as Olde Englishe. (Often improperly called Gothic by people who don't like it.)

Body (type) – The space, measured from top to bottom, on which a letter is printed.

Body type – The type used for the main text of a document or publication.

Body copy – The main text of a document or publication.

Bold (type) – The thicker version of a particular typeface.

Because bitmapped fonts cannot be enlarged or reduced properly, a separate set of characters must be created and stored for every size you want to use. This takes up a lot of disk space – a four-size collection of 12pt, 24pt, 48pt and 96pt for example would typically require about 150,000 bytes – and lots of memory. And precious Chip memory at that.

So, as far as DTP is concerned, bitmapped fonts are only useful for on-screen work, no good for printed output. For that, we need a more sophisticated, structured system.

OUTLINES

Structured typefaces make use of 'outline' or 'vector' technology.

These typefaces are composed of mathematical equations (or 'vectors') which describe the shape (or 'outline') of each character. The outlines are defined by a number of control points. A straight line, for example, would typically be defined by two control points, one at the start and one at the end point.

Curved lines, or segments of curved lines, would be defined by a start and end control point, plus one or two 'attractors' which define the shape of the curve. These curves are known as 'bezier' curves, named after the person who invented them.

The most significant benefit of outline typefaces is that they can be easily manipulated by the computer. Because they are defined mathematically they can be scaled, skewed and rotated without loss of output quality. And no matter how much they are shrunk or enlarged, outline typefaces always retain their shape.

There are two types of outline typefaces whose names you will probably recognise, Compugraphic and PostScript.

Compugraphic typefaces are produced by AGFA Corporation, and these use 'second degree' bezier curves, which means nothing more complicated than the fact that curves are defined by a single control point between the start and end points. In plain English the mathematical equation that defined a curve in a

Compugraphic character would read something like: "Go from this start point to that end point, travelling through this here inbetween point, using [some formula] to draw the curve".

There are two formats of Compugraphic typeface used on the Amiga. There's the kind that *Professional Page* 3 uses, which

comprises two files named 'fontname.lib', and 'fontname.metric'.

The '.lib' file is the typeface outlines description, the '.metric' contains information concerning the character widths, and the different amounts of space that should be

inserted between characters. (In typeface terminology the term 'metrics' means 'character width and spacing information').

The '.dat' files that *Professional Page* has for each typeface is unrelated to the actual Compugraphic format, but something *Professional Page* requires. *PageStream* also uses Compugraphic typefaces in this two-file format.

The other Compugraphic format is the kind adopted by Workbench 2 in which the outline data and the metrics are combined into a single file. Workbench 2 gives these files a '.type' extension and expects to find them in the 'FONTS:_Bullets_Outlines' directory. These files are the same format as the alternative 'CS' Compugraphic format that *PageStream* supports.

So, *PageStream* can use the Workbench Compugraphic fonts, but *Professional Page* currently cannot.

POSTSCRIPT TYPEFACES

PostScript typefaces fall into two categories, Adobe Type 1 and Adobe Type 3 – Adobe Systems being the inventors of these standards, and

also the inventors of PostScript.

The main difference between Type 1 and Type 3 typefaces is that Type 3 typefaces are written in standard PostScript while Type 1 typefaces employ a simpler version of the language which PostScript interpreters can render more quickly.

Another difference is that Type 1 typefaces are 'hinted' whereas Type

and the lines become 10 times thinner, it's possible that when they are printed they'll be so thin that you can't see them. Hints tell the output device that 'the line that forms this part of this character of this typeface in this size should be this thick'.

Type 3 typefaces comprise a single file, normally given the extension '.psfont'. The main use of Type 3 typefaces is for when you want the font description to be part of the PostScript file, which means there will never be any danger of a remote PostScript output device not being able to print it because it doesn't have that particular typeface built into it or available on disk. Type 3 typefaces are sometimes called Pure PostScript, and even sometimes Pure Type 1, which can be confusing.

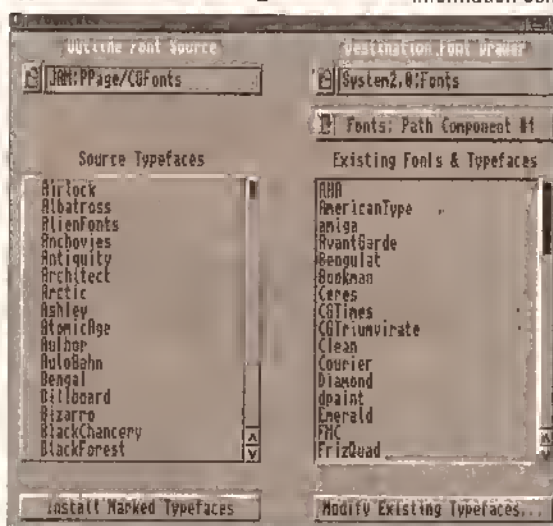
Type 1 typefaces – usually called PC Type 1 to distinguish them from Pure Type 1 and Adobe's Macintosh format Type 1 typefaces – comprise two files, plus an optional third file which is a low resolution screen font that can be used for speeding the display. The description of the outline of all the characters in the typeface is contained within the larger of the two main files, normally given the extension '.PFB', which stands for Printer Font Binary. Information concerning the metrics –

the character widths, and the amounts of space to be inserted between different characters – is held in the smaller 'AFM' file, for Adobe Font Metric.

If there is a screen font for the typeface, it will have a filename of something like 'Fontname-24.ABF' – 24 being the point size and ABF standing for Adobe Binary Font (not to be confused with

archlight-24.abf	13281	Albapross.dat	36
archlight-48.abf	1431	Albapross.lib	69856
archlight.afm	2963	Albapross.metric	3788
angha-12.abf	2137	Alienfont.dat	59
angha-24.abf	27146	Alienfont.lib	14928
angha-48.abf	2508	Alienfont.metric	3272
angha-afm	4892	Anchovies.dat	56
ankle-12.abf	8468	Anchovies.lib	53648
ankle-24.abf	11264	Anchovies.metric	1668
ankle-48.abf	13868	Antiquity.dat	56
ankle-afm	2188	Antiquity.lib	63568
arktooth-12.abf	3638	Antiquity.metric	1668
arktooth-24.abf	21428	Architect.dat	56
arktooth-48.abf	3341	Architect.lib	56592
arktooth.afm	3665	Architect.metric	1668
arktooth-12.abf	3992	Arctic.dat	47
arktooth-24.abf	4769	Arctic.lib	32256
arktooth-48.abf	3321	Arctic.metric	1668
arktooth-afm	6521	Ashley.dat	47
arktooth-12.abf	8851	Ashley.lib	43368
arktooth-24.abf	44796	Ashley.metric	3472
arktooth-48.abf	2482	AtomicAge.dat	56
arktooth-afm	6682	AtomicAge.lib	38944
arktooth-12.abf	13658	AtomicAge.metric	1688

In the directory window on the left you can see the files that comprise some Adobe Type 1 typefaces. Note that in this case the Printer Font Binary files do not have the usual 'PFB' extensions, but they are still Printer Font Binary files. In the right-hand window are the groups of three files which are the Compugraphic typefaces *Professional Page* uses



All the commercial and shareware Compugraphic typefaces talked about in this article can be used by Workbench 2, although a few of the shareware ones may prove problematic. But at 20p to 30p each, who's complaining?

3 typefaces are not.

The term 'hinted' is a little tricky to explain. Some will tell you that it means that the curves are better defined – hinting has to do with the scaling and thicknesses of lines at small point sizes. If you can imagine a typeface that is constructed of very thin lines at something like 72pt, what happens to those lines if you scale the typeface down to be, say, a tenth of the size? If logic is applied

Printer Font Binary).

The curves in Type 1 typefaces are defined by 'third degree' bezier curves. Remember we learnt earlier how Compugraphic typefaces have one control point or 'attractor' to describe a second degree bezier curve? Well Type 1 typefaces use two attractors. This makes them more flexible than Compugraphic typefaces because fewer segments are required to describe each curve. It also makes Type 1 typefaces more difficult for the software to work with.

Professionally speaking, because of the hints and the two attractors, Type 1 output is of a higher quality than the un-hinted Type 3 or one-attractor Compugraphic typefaces,

JARGON BUSTING • JARGON BUSTING

Book (type) – The medium version of a typeface, normally intended for continuous use (as opposed to headings and the like).

Cap height – The height of capital letters in a particular font, measured from the baseline.

Character – An individual letter, number, punctuation mark.

Condensed – Type that is narrower than the standard face.

Copy – Text, in manuscript or on disk, that is ready for setting.

Cursive – Type that imitates a formal or informal handwritten style.

Decorative (type) – Ornate typefaces not usually used for continuous text (Also called Display)

but only so far as high resolution PostScript output devices are concerned. It is the PostScript device that does the hinting, it's not actually part of the typeface description, so Type 1 characters that are printed on dot-matrix printers without going through a proper PostScript interpreter (as per *PageStream*) are printed without the hints.

The same is not true of Compugraphic typefaces, which were designed specifically for printing on non-PostScript printers. Although the hinting isn't as sophisticated as PostScript hinting, the Compugraphic hints are applied. The upshot of this is that small point size Compugraphic typeface output to non-PostScript printers is usually of a higher quality than small point size Type 1 output to non-PostScript printers. Once you get above about 12pt, though, Type 1 typefaces have the edge, although a lot depends on how much care and attention the designer lavished on the typeface.

All structured typefaces have one serious limitation, the fact that they cannot be splatted directly on to the screen in the way bitmapped fonts can. The outlines of structured typefaces must first be converted into bitmaps before they can be displayed. This takes time. Compugraphic typefaces, which use the simpler one-attractor outlines,



A shareware Compugraphic typeface can produce rogue characters. The W has gone weird at top-right, which means I can't use this typeface for words that have a W in. I've never had this problem with converted commercial Adobe Type 1 typefaces

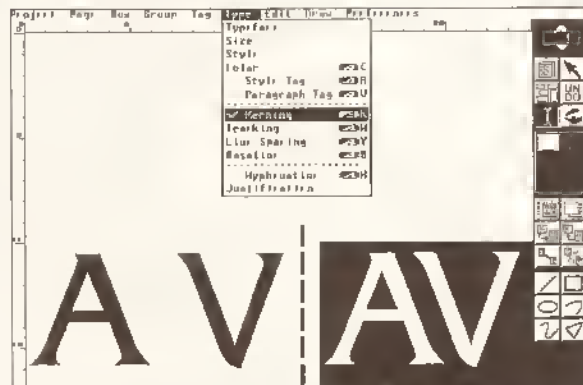
convert far more quickly than Type 1 typefaces, which use two attractors.

The software will normally get around this problem by 'caching' the bitmapped characters as it goes, storing them in memory in case it needs to use them again. This is why the first time you use a Compugraphic or Type 1 character in a particular font it will take a little while to display on-screen, whereas when you use the same character in that font again it appears more quickly.

How many characters the software can cache depends on how much memory you have available; if you have little memory then almost every character you use will have to be converted every time you use it. So more memory really can speed up your desktop publishing.

A side effect of this memory caching technique on the Amiga is

that as more characters get cached, memory becomes more fragmented. When you come to print your document the software will throw the caches away to free up memory for printing, but the memory that gets released will sometimes be all over the place, not in one contiguous chunk, especially after a long DTP session or if you have been in and out of different magnification levels. The software will need a fairly large chunk of contiguous memory to print



Where relevant, the commercial Computer Safari fonts contain kerning information so that certain character pairs fit together better. Above, unknicked on the left, kerned (and highlighted) on the right

the document, and if it can't find a big enough chunk you'll notice that bits of your document don't get printed. In this situation you have to save your document, re-boot your Amiga to de-fragment memory, load the software and the document again, and try another print. It's not enough to quit the DTP program and run it again, to defragment memory you have to re-boot, there is no other way. The more memory you have, the less frequent this problem will be.

TYPEFACE SOURCES

Various Compugraphic and Adobe typeface packages are available, and you needn't have to buy them on Amiga formatted disks. Using a program like *CrossDOS* or the shareware *MultiDOS* you can buy Adobe Type 1 typefaces on PC formatted disks and transfer them on to Amiga formatted disks or your hard drive, after which *PageStream* will be able to use them directly and *Professional Page's FontManager* program will be able to convert them to Compugraphic format.

There are at least three Adobe typeface packages available on PC format disks, the Adobe Typesets 1, 2 and 3. The best thing to do here is to flick through the adverts in a PC magazine, find someone who sells them, phone and ask for details. Be prepared to spend between £50 and £120 for each package.

The 'Classic 35' typefaces that are built into most PostScript

printers come in two PC packages, Adobe Type Manager (13 typefaces) and Adobe Plus Pack (the other 22). Typically this combination will cost you about £200. I hope this puts the £80-ish price tag of the *Compugraphic Outline Fonts Pack* for the Amiga into some perspective, which contains the Compugraphic equivalent of the typefaces in those two Adobe packages.

You could also trawl the PC shareware libraries for Adobe Type 1 typefaces.

There are thousands to choose from, but you must make sure that the typefaces you buy come with the '.PFB' and '.AFM' files. There will probably be other files as well, like the '.PFM' file that *Windows™*

uses, but as long as you've got the Printer Font Binary and the Adobe Font Metric files, you can use them with the current version of *PageStream* and *Professional Page's FontManager*.

A British source to check out is Bitstream. At the time I am writing this article Bitstream's range of typefaces for the PC is still in its own proprietary format, but the company is smack in the process of converting them all to Adobe Type 1. By the time you read this they should be available. Can't tell you exactly what and how much because it hasn't happened yet; phone Bitstream (0242 227377) and ask for details.

Don't buy Adobe typefaces on Macintosh disks, not because you won't be able to use the typefaces, but because you won't be able to read the disks without extra hardware and software. Almost everything Adobe for the Mac is available for the PC as well, so get your safari suit on and hunt them down.

Talking of safari, Essex based EM Computergraphic (0255 431389) has recently imported Computer Safari's range of Adobe Type 1 typefaces from the States and is selling them at extremely reasonable prices on Amiga formatted disks.

There are 24 disks available, most containing three typefaces, although a few disks contain four or five. The first 16 disks are £7.99 each, the remaining eight are £12.99. The difference in price is not because the last eight contain more, it's simply because these disks contain faces that Computer Safari considers to be of greater aesthetic value, and so charges more for those particular disks.

JARGON BUSTING • JARGON BUSTING

Display (type) – The larger sizes of type used in headings.

Descender – The part of a letter that comes below the baseline in lower case letters like g p q y.

Desktop publishing – A means of publishing in which all stages from writing to typesetting are done by means of a computer and software.

Font – A particular typeface printed in a particular size and style. (Note: a font is not the same thing as a typeface.)

Gothic – Properly used to describe Sans-serif typefaces, but also commonly applied to the Germanic or Olde Englishe style which is more properly called Black Letter.

Indent – Settling that is less than the full column width; not just the space inserted at the beginning of a line, but also any space inserted at the end of the line (eg left and right margins for text in panels).

Italic (type) – The sloping-to-the-right version of a particular typeface. (Also called Kursiv or Oblique.)

Measure – The width of a column of text, normally specified in picas.

Page depth – Length of the text area on the page (ie from top to bottom).

Pica – A unit of typographical measurement, 12 points = 1 pica.

Point – The basic unit of typographical measurement. In desktop publishing, 72 points equals exactly one inch.

All the Computer Safari typefaces work fine with all versions of PageStream, although version 2.1 or above will be needed to use the Adobe Type 1 versions of the typefaces. I tested them with Professional Page's FontManager, and it converted them all except one called Celeste (on Disk 14) which gets three-quarters of the way through and then gives up the ghost. EMC knows about this problem and is trying hard to correct it. To date Celeste still won't convert, so it might be best to phone and check before buying this one.

Something else that is happening as I write is the conversion of the Computer Safari Type 1 typefaces disks into disks of Compugraphic equivalents, so by the time you read this Professional Page users will be able to buy the collection pre-converted if you don't want the bother of doing it yourself.

PageSetter II users can also get in on the act because EMC provides the additional '.atc' files that this program requires in order to use Compugraphic typefaces.

ON SAFARI

The Computer Safari typefaces are mainly Decorative and Cursive, although there are versions of classic Serif faces like Bodoni, Quadrant, Gourda and Bookman Demi scattered about the first 16 disks. Some of the typefaces in the £12.99 collections are very nice, including an excellent Black Letter typeface called Wedding Text, which is that Olde Englishe design that so many people like to use in letterheads.

There are about 80 typefaces currently available, and a quick call to EMC will no doubt result in the acquisition of an example sheet of what they all look like.

EMC also stocks a large range of public domain and shareware Adobe Type 1 and Compugraphic typefaces, sold in five-disk volumes for £12.50.

Each of the Adobe Type 1 volumes, which can be used by PageStream 2.1 (and above) and Professional Page 3, comprises between 60 and 90 typefaces, and there are all sorts of goodies to be found. Crillee and Ultra Black in Volume 4 are two of my favourites, along with Black Chancery and Lefty Casual.

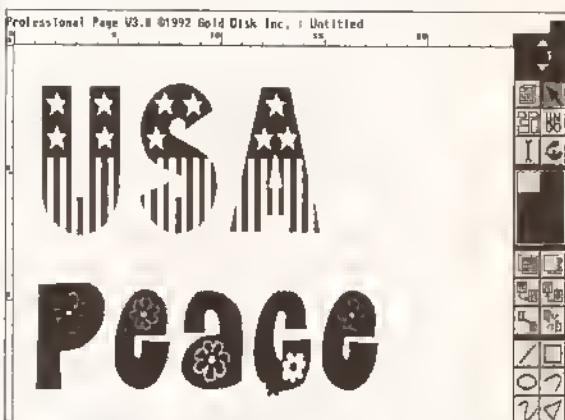
There's a smashing little Lucida type family in Volume 6, along with the truly desirable MBembo (Serif), MGillSans (Sans-serif) and MRockwell (Slab-serif) families and the infinitely discreet and delicate Murel Cursive typeface.

Davy's Ribbons in Volume 7 will knock your socks off, as might HeadHunter which is a ghoulis typeface constructed from bones.

At an average of about 18p per typeface it's impossible to criticise, although a lot of these typefaces are shareware and strictly speaking you should send a contribution to the designer of the typeface if you find it

cost £9.99; about 33p per typeface. Again they will work with all versions of Professional Page from 1.3 onwards, PageSetter II, and Workbench 2.

There are a couple of caveats you should keep in mind when buying shareware typefaces. Firstly, the odds are that the typeface will not contain a complete character set. All the letters and numbers will probably be there, plus the basic punctuation marks, which is the main thing I suppose, but you



Computer Safari decorative typefaces: using two overlaid copies of the same word, one with the baseline shifted, the stars part of 'USA' is in blue, the strips bit in red. In the word 'Peace', each has a differently coloured outline and the flowers are also coloured

useful and intend to keep it. The shareware typefaces will have documentation which tells you how much to send and where to send it; your conscience will do the rest.

The biggest problem with these shareware Adobe Type 1 collections is that many will not convert through Professional Page's FontManager into Compugraphic format. There's no way to tell which will and which won't, except by trying it out. Which is why EMC is currently sweating over a hot computer doing the conversions for you. Two five-disk volumes of shareware Compugraphic typefaces are already available, with more planned. The typefaces on these disks will work with all versions of Professional Page from version 1.3 onwards, PageSetter II, and Workbench 2 as well of course. Again, they cost £12.50 and average about 60 typefaces per volume, about 20p per typeface.

Another company which stocks shareware Adobe Type 1 and Compugraphic typefaces is George Thompson Services (0707 664654). This company has two volumes of shareware Adobe Type 1 typefaces and two volumes of shareware Compugraphic typefaces.

GTS's Adobe Type 1 volumes are five disks big and each costs £10.99. Although these are cheaper than EMC's volumes, GTS hasn't managed to pack quite as many typefaces on to each disk, and if you sit down and work out the cost per typeface it works out almost exactly the same. The GTS Compugraphic volumes each comprise three disks of approximately 30 typefaces and

shouldn't expect extras like foreign characters and the other special characters that professional typefaces include. As they originate mainly from North America, some shareware typefaces may not even include a pound symbol.

The second caveat is that the shareware Compugraphic typefaces that have been converted from Adobe Type 1 with Professional Page's FontManager are not always correct. In a few typefaces there may be one particular character that renders badly, or a few alphanumeric characters that won't render at all.

Whether this is FontManager's fault or a bug in the Adobe Type 1 data is open to argument. Problems very rarely happen with FontManager when converting professional,

commercial Adobe Type 1 typefaces, which leads me to believe that the main fault lies within the Type 1 data of the shareware typeface.

There are literally thousands upon thousands of commercial and shareware Adobe Type 1 typefaces available; mainly over the other side of the Atlantic, but for a start you can phone MicroPace (0753 551888) and ask about Soft-Logik's Type 1 collection, which is enormous and contains versions of all the classic, time-honoured type families.

If you've got a modem and comms software there are companies which will sell them to you on-line and transmit them down the phone to you. Try GraphiService London Ltd on 071 724 8834 (voice), 071 724 4689 (modem).

As for designing your own Adobe Type 1 and Compugraphic typefaces, at the moment the only Amiga utility which will enable you to do this is a German program called Font Designer. HB Marketing (0753 686000) is negotiating with the manufacturers to bring an English version to the UK, so if you want it too, phone HBM and say so, as the man making the deal is unsure whether it'll sell here or not. It won't be expensive – I told him you'd kill for it, so don't let me down.

Thanks to Stuart "I've got a lot of fonts" Anderton, Don "Who?" Cox, Seppi "What a silly first name" Evans, Errol "What a silly last name" Madoo, and Paul "Wanna buy a copy of AmigaTeX?" Ockenden for their help and advice during the preparation of this article.

JARGON BUSTING • JARGON BUSTING

Roman (type) – The upright version of a particular typeface. (Also called Regular, Book or Medium, and sometimes Antique or Gothic.)

Sans-serif – A typeface without serifs. (Also called Grotesque.)

Semi-bold – A weight of typeface that is heavier than Medium but not as heavy as Bold. (Also called Demi.)

Serif – The small stroke at the end of the main stroke of a letter.

Set – To assemble letters into words and lines.

Slab serif – A typeface with bold strokes and thick, square serifs. (Also called Egyptian.)

Swash – Characters with additional flourishes.

Type – Letters, numbers, punctuation and other non-alphabetic characters.

Typeface – A particular style of type.

Type family – A series of typefaces in different weights and widths, but with the same design characteristics.

Typeset – Text printed in a recognisable typeface.

Ultra – An exaggerated heavy version of a particular typeface.

Wide (type) – The wide version of a particular typeface.

x-height – The height of lower case letters in a particular font, measured from the baseline.



FIRST CHOICE COMPUTER CENTRE

OPEN 7 DAYS A WEEK

OPEN MON - SAT 9.30AM-5.30PM
SUNDAY OPENING 11.00AM-3.00PM
THURSDAY NIGHT LATE 9.30AM-7.30PM

AUTHORISED DEALERS FOR STAR,
CITIZEN, COMMODORE, ACORN,
ROMBO & SUPRA

FREE DELIVERY!

WHY FIRSTCHOICE?

- * All prices include VAT and Standard Delivery
- * All hardware/computers are genuine UK spec.
- * Free Fast Standard 4 to 7 day Delivery
- * Guaranteed 2 to 3 day Delivery only £2.00
- * Guaranteed Next Day Delivery only £4.50
- * Open seven days a week for your convenience
- * Overseas orders welcome

HOW TO ORDER

Order by telephone quoting your credit card number. If paying by cheque please make payable to FIRST CHOICE. In any correspondence please quote a contact phone number and post code. Allow 5 working days for cheque clearance

Technical & Sales 6 LINES

24 HOUR MAIL ORDER SERVICE!!

0532 319444

FAX: 0532 319191

PLEASE ADDRESS ALL
CORRESPONDANCE TO:
DEPT AS, UNIT 3
ARMLEY PARK COURT
OFF CECIL STREET
STANNINGLEY ROAD
LEEDS, LS12 2AE

Prices are subject to change
without notice. E&DE.



COMPUTERS

NEW LOW PRICES!! AMIGA 600

Commodore's new AMIGA. Compact in size the A600 will take "Smart Cards". Ultra reliable with the latest surface mount technology. 12 month on site warranty, workbench 2.05 and mouse.

now only £279.99

or £324.99 for 2 Mb version

AMIGA 600HD

with a built in integral hard disk 2 Mb RAM only £45.00 extra

20 Mb HD.....only £449.99

65 Mb HD.....only £POA

85 Mb HD.....only £POA

Please note that only the 20Mb HD version comes with on site maintenance. The larger versions are covered by a full 12 month warranty.

AMIGA 600 Deluxe

Upgrade your A500 Plus or A600 with our own Phoenix ROM shaver and 1.3 chip making incompatibility problems a thing of the past! Complete with the Cartoon Classics software pack.

A600 Deluxe only £344.99

or £385.99 for 2 Mb RAM

A600HD Deluxe only £509.99

or £549.99 for 2 Mb RAM

AMIGA 1500 Plus

now complete with the latest 2.04 Kickstart chip and Workbench 2.04!! Thin 2000 Basic pack is the ideal upgrade machine for those wanting to upgrade from their present A500. 12 month on site maintenance.

only £499.99

AMIGA 1500 Plus

Business & Entertainment Software pack

as above but with Deluxe Paint 3, Padium Works (Integrated business package), Home Accounts, Puzznic, Elf, Toki plus the latest Amiga Format Tipa book and joystick. 12 months on site maintenance.

now only £549.99

AMIGA 1500 Deluxe

incorporating our own Phoenix ROM shaver and 1.3 Kickstart ROM chip enabling you to switch between the old and new operating systems

only £559.99

CDTV

Complete with Hutchinsons Encyclopedia, Lemmings and Welcome CD disk. CDTV is a powerful media for both entertainment and education. Capable of handling up to 540 Mb of data, whole encyclopedias can be stored on just one compact disc. The CDTV is also a high quality audio CD player. Large range of CDTV discs all at discount prices

only £399.99 UK Spec.

TRADE IN YOUR A500 FOR A CDTV.

PHONE FOR DETAILS

CD Rom Amiga A570

The add-on that every Amiga has been waiting for!! Compatible with 1.3 and 2.04 AMIGA 500's. Turns your Amiga into a CDTV. Plays normal CD discs also. In stock now!!

only £329.99 NEW!!

CDTV Trackerball

Complete with 2 joystick ports, this is a must for CDTV owners.

only £74.99

CDTV keyboard

transforms your CDTV into an Amiga A500 so you can use it as a standard Amiga.

only £49.99

PRINTERS

NEW LOW PRICES!!

All our printers are UK spec

All our printers inc ribbons and free std printer cable. All Citizen printers come with a 2 year guarantee. All printers have a full UK specification.

Canon **CITIZEN**

HEWLETT PACKARD **STAR**

Star LC20.....£136.99

180 cps draft, 45 rps NLQ, quiet mode and multi fonts, push button operation.

Star LC200 colour...£195.99

9 pin colour, 8 fonts, 225 rps draft, 45 rps NLQ, A4 landscape printing.

Star LC24-20.....£199.99

24 pin quality, 210 rps draft, 60 cps LQ, 16K buffer expandable to 48K, 10 fonts and LCD front display.

Star LC24-200 mono...£219.99

24 pin, 222 cps draft, 67 rps LQ, 10 fonts, A4 landscape, 7K buffer expandable to 39K

Star LC24-200 colour...£269.99

Colour version with 38K buffer expandable to 62K

Star XB24-200 colour...£379.99

Professional quality with on-site maintenance, very quiet.

Star SJ48 Bubble jet...£219.99

Laser quality, ultra quiet, Epson compatible, portable in size.

Star LC20 Autosheet feeder...£59.99

Star LC200 Autosheet feeder...£62.99

Star LC24-20 Autosheet feeder...£64.99

Star LC24-200 Autosheet feeder...£64.99

Star SJ48 Autosheet feeder...£52.99

Citizen Swift 9 Colour...£183.99

Excellent value 9 pin colour. Highly recommended

Citizen Swift 24e Colour...£269.99

Probably one of the best 24 pin colour budget printers

Citizen 224 Colour...£224.99

Same output as the 24e but with less fan noises

NEW Swift 240 Colour...£249.99

Citizen Project inkjet...£379.99

Semi auto sheet feeder...£29.99

Automatic Sheet feeder...£79.99

Canon BJ10ex...£229.99

Laser quality output. Larger buffer than the Star SJ48 Canon Star bubblejet cartridges...£17.99

Canon BJ20...£309.99

Built in auto sheet feeder and extra fanless than BJ10

Canon BJ300...£379.99

Desktop bubble jet with laser quality

Canon BJ330...£519.99

Wide carriage version of the BJ300

BJ10ex Autosheet feeder...£52.99

Hewlett Packard Printers

HP500 mono...£349.99

HP 500 Colour...£529.99

HP500 mono cartridges...£14.99

All HP printers come with a

3 year warranty

FIRST CHOICE PACK

With the FIRST CHOICE Pack you can make sure you have every thing you need when buying an Amiga. All the essentials required for the first time buyer and at a bargain price!!

- * Comprises:
- * Top quality microswitched Powerplay Cruiser joystick
- * Mouse Mat
- * Dust Cover
- * 10 high quality Blank Disks
- * Plus £70.00 of software!!

only £29.99

RRP £95.00!!!

MONITORS

NEW LOW PRICES!!

All our monitors are UK spec. All monitors come complete with a free Amiga lead.

WARNING: Before you purchase a monitor make sure it has a full UK specification. You might be buying what you think is a similar monitor at a lower price but it is likely to be a "GREY" import. These monitors do not comply with British safety standards and are not covered by an official warranty

PHILIPS CM8833 MK2

stereo colour monitor

Colour stereo monitor. 600*285 line resolution, green anemine facility, one year on site maintenance.

now with Lotus Turbo Esprit

only £199.99 UK Spec.

Commodore 1085 SDI

Stereo Colour monitor

features 51 dot pitch resolution. Amiga cable included.

only £219.99

PHILIPS BRILLIANCE

SVGA Colour monitor

with overscan facility

The Brilliance monitor has a high quality Super VGA resolution. Includes overscan facility, 28 dot pitch and tilt/swivel stand. 12 months on site maintenance.

1500 VERSION £399.99

with Flicker Free Video card

A500 VERSION £499.99

GOLDSTAR REMOTE

control TV/monitor

superior to a standard TV set with full remote control

now only £179.99

COMMODORE 1960 multisync

only £436.99

SPECIAL OFFERS ON ACCESSORIES WHEN BOUGHT WITH A MONITOR!!

TILT & SWIVEL STANDS...£11.99

14" MONITOR COVERS...£5.99

SUPRA MODEMS

The New super fast

Supra-Fax Modem

V.32 bis (14400 baud !!!)

Allows you to send and receive fax messages. This new modem from Supra has full 14400 baud capability. Spec includes V.32bis, V.32, V.22bis, V.22, V.21, MNP2-5, V.42, V.42bis, Class 1 & 2 commands, 9600/14400 Group 3 Fax. Includes firm romms software and modem cable

only £259.99!!!

Supra Fax Plus

(up to 9600 BPS)

With the ability to send faxes!! and even faster than the standard 2400 from Supra with auto dial and auto receive, 9600 bps Hayes compatible. V.22, V.42 Bis, MNP 2-5 and auto adjusting facility to maximise transmission speeds. Spec includes free modem cable and comms software!!

now only £139.99

Supra 2400zi Plus

Internal version for the 1500/2000/3000 range. Same spec as the Supra Fax Plus but without the Fax capability. Includes firm modem cable and A-talk 3 comms sw

only £99.99

Supra 2400

On line with this incredible value fast modem with auto dial and auto receive. 2400 baud Hayes compatible. V.22 BIS. Includes modem cable and comms software!!

only £79.99

All Supra Modems come with a 5 year warranty!!

NEW!!

VIDEO AMIGA 12

Replacing the famous Complete Colour Solution, this new package from ROMBO is even better value!!

The ultimate low cost colour digitiser. No filters or RGB splitter required. Colour images can be captured in less than a second, mono images are grabbed in real time. Fully compatible with any video source.

Includes multitasking software, cut & paste with masking, multiframe store with animated playback, composite or s-video input, 4096 HAM support and many more advanced features.

only £79.99
TAKE 2

This is latest addition package for the Amiga from ROMBO. Features include load and save from D. Paint animations and IFF files. Supports HAM graphics.

only £42.99
MEGAMIX MASTER

This is a low cost 8 bit, high spec, sampler that plugs into your printer port. Special effects include echo that can be added in real time, fully multitasking and easy to use.

only £29.99
We recommend all ROMBO products

HARD DRIVES & ACCELERATORS

AMIGA A590 20 Mb
with 2 Mb of unpopulated RAM

only £199.99!!

GVP HARD DRIVES & ACCELERATORS

AMIGA A500 HARD DRIVES

GVP Series II HD8+ 52Mb.....only £345.99

GVP Series II HD8+ 105Mb.....only £449.99

GVP Series II HD8+ 240Mb.....only £734.99

A500 GVP Combo's

A510 Combo 40MHz/52Mb HD.....only £699.99

A520 Combo 40MHz/120Mb HD.....only £849.99

A530 Combo 40MHz/240Mb HD.....only £1039.99

68882 Co-Processor for A530.....only £234.99

GVP memory RAM

8Mb RAM card AMIGA 1500/2000 with 2Mb.....only £149.99

32bit 60ns 1Mb SIMM for Accelerator.....only £64.99

32bit 60ns 4Mb SIMM for Accelerator.....only £179.99

1500/2000 Hard Drives

Impact Series II HC8+ Control card.....only £134.99

Impact Series II HC8+ with 52Mb HD.....only £274.99

Impact Series II HC8+ with 120Mb HD.....only £419.99

Impact Series II HC8+ with 240Mb HD.....only £639.99

Impact Series II HC8+ with 420Mb HD.....only £1169.99

1500/2000 G-FORCE ACCELERATORS

G-Force 030-25MHz with 1Mb 32 bit RAM.....only £549.99

G-Force 020-40MHz with 4Mb 22 bit RAM.....only £899.99

G-Force 030-50MHz with 4Mb 32 bit RAM.....only £1269.99

G-Force 040-28MHz with 2Mb 32 bit RAM.....only £1699.99

All GVP products come with a

full 2 year warranty

NEW IDE 500 TRUMP CARD

Similar to a GVP hard drive but accommodating any std IDE hard drive. 8 Mb of RAM available using standard SIMMS

only £129.99
without drive
or £299.99

with 44Mb Seagate HD fitted,
External PSU.....£37.99

THE POWER SCANNER

This scanner comes with the latest version 2 software. With bright and sharp grey scale profile and flexible scan and image display manipulation options. Options include Clenn up, embolden, resize and flip. Recommended

only £94.99

Colour version only £229.99

MICE & TRACKERBALLS

NAKSHA MOUSE with Operation Stealth,

mouse mat, holder and 2 year warranty, 290

DPI.

only £24.99

ROCTEC MOUSE High quality mouse

for the Amiga. Fully micro-switched.

only £13.99

GOLDEN IMAGE Happy mouse inc

mouse mat. Same quality as the Naksha mouse.

only £19.99

GOLDEN IMAGE Brush mouse with

Deluxe paint 3. New concept in mice. Held in a similar

way to pen.

only £24.99

Golden Image optical mouse.....£29.99

Zydec Trackerball.....£29.99

DISK DRIVES

Roclite 3.5" The super slim Roclite has

received the best review for disk drives in Amiga Forum

only £57.99

Cumana 3.5" 1 meg external drive. The

best name in disk drives now at a super low price.

now only £52.99

GOLDEN IMAGE Tracker drive

with built in LED track display

only £54.99

GENLOCKS

Rocgen with built in mode switch box and

auto pass thru function.....**only £89.99**

Rocgen Plus Includes dual control for

overlay and keyhole effects, extra RGB pass

thru.....**only £119.99**

ROCGEN CROMA KEY

For creating special effects in video

production with geulons

only £269.99

SUPRA RAM

The ultimate Amiga A500 expansion. Take your A500 up to

9 Mb (10 Mb with the A500 Pins). Fits onto the side expansion

port. Auto configures with no software patching.

8Mb pop to 1Mb.....£94.99

8Mb pop to 2 Mb (256*4zips).....£119.99

8Mb pop to 2 Mb (1Mb*4 zips).....£139.99

8Mb pop to 4 Mb.....£194.99

8Mb pop to 8 Mb.....£299.99

8Mb pop to 2 Mb for 2000/

1500 range.....£149.99

512K RAM EXPANSION

Top quality Cortex RAM expansions for the A500 complete

with battery backed blank and on/off switch. This

RAM expansion will not in any way invalidate your

Amiga warranty!!

now only £22.99

EMULATORS

KCS Power board

Regarded as one of the best emulators on the market.

only £179.99

1500/2000 adapter only £59.99 MS-DOS 4.01.....£15.00 extra

New Commodore 386-25

This is a PC 386-20SX Bridgeboard running at 25 MHz

only £439.99

The New GVP 16 Mhz PC-286

for use with the GVP Series II HD8+ or GVP A530

hard disk drives

only £239.99

VORTEX AT Once Plus 16Mhz

Now with 16Mhz speed.....**only £214.99**

PHOENIX AMIGA A500 PLUS & A600 RAM

Unpopulated.....**only £16.99/£29.99**

Populated to 512K.....**only £29.99/£39.99**

Populated to 1 Mb.....**only £39.99/£49.99**

PHOENIX ROM SHARERS

Unpopulated.....**only £16.99/£29.99**

Populated to 512K.....**only £29.99/£39.99**

Populated to 1 Mb.....**only £39.99/£49.99**

DRAM & CUSTOM CHIPS

1mb by 8/9 SIMMS.....£22.99 per Mb

4 Mb by 9 SIMMS.....£95.99 per 4 Mb

1 Mb by 4 DRAMS.....£27.99 per 4 Mb

1 Mb by 4 ZIPS.....£38.99 per Mb

256 by 4 DRAM (OILS) Ideal for A590 and others

4* (512K).....now only £3.29

8* (1Mb).....now only £2.09

16* (2Mb).....now only £2.89

Kinkstart 1.3.....£22.99

Kinkstart 2.04.....£33.99

Fatter Agues 8377A.....£30.99

Super Dnise.....£21.99

6570 Keyboard controller.....£7.99

CIA8520A Disk controller.....£7.99

ACCESSORIES

Pro-Midi 2 Interface featuring midi in/out thru,

and 2 switchable midi out thru sockets.....**only £24.99**

Mouse/joystick port switcher.....**only £13.99**

Computer Video Smart Switch.....**only £19.99**

2 way Parallel port shaver box in a nibble.....**only £17.99**

Amiga Sound Enhancer Plus by Omega Projects. Hear the Amiga's

sound like you've never heard it before.....**only £36.99**

PRINTFACE (ADDITIONAL PRINTERPORT

FOR THE 1500/2000/2000).....£35.99

QUALITY MOUSE MATS.....£3.99

25 CAPACITY DISK BOX.....£2.99

40 CAP LOCKABLE DISK BOX.....£4.99

100 CAP LOCKABLE DISK BOX.....£6.99

90 CAP STACKABLE BANK BOX.....£8.99

150 CAP STACKABLE POSSO BOX.....£16.99

add £3.00 delivery if purchasing just one Posso or Bank box. Free

delivery when purchased with other product or when buying 2 or more.

AMIGA A500 DUST COVER.....£3.99

AMIGA 600 COVER.....£2.99

14" MONITOR DUST COVER.....£6.99

12" MONITOR DUST COVER.....£5.99

AMIGA TO SCART CABLES.....£4.99

STD 1.8 METRE AMIGA PRINTER LEAD.....£4.99

MODERN AND NULL MODEM CABLES.....£9.99

2 WAY Parallel ports harness.....£17.99

DISKS

All our 3.5" disks are GUARANTEED FOR A LIFETIME and are

CERTIFIED 100% ERROR FREE double sided, double density disks are high

quality magnetic media and are extensively used by duplicating houses.

QTY 3.5" Bulk OR SONY BRANDED

10.....£4.99.....£6.99

30.....£14.29.....£17.99

50.....£21.99.....£28.99

100.....£39.99.....£54.99

200.....£72.99.....£99.99

500.....£169.99.....£POA

1000.....£339.99.....£POA

Sony Branded disks come complete

with labels

Disk Labels.....500.....now only £6.99

Disk Labels.....1000.....now only £9.99

SOFTWARE

WORD PROCESSING/DTP

PLATINUM WORKS & HOME ACCOUNTS

As recommended by Commodore with Paragon Software and other software.

Features include 250 templates, word processing, spelling checker, insert date, time,

and page number, scale graphics to any size, drop graphics, multiple columns

layout, magnified and mirrored page view and much more.

only £44.99!!

FINAL COPY new version 1.3!!

Excellent word publisher from the writers of PenPal. With built in outline

features for top quality output, full graphics import capability (IFF and HAM).

Features include dimensions, spelling checker, insert date, time,

and page number, scale graphics to any size, drop graphics, multiple columns

layout, magnified and mirrored page view and much more.

Recommended now only £47.99

New! KINDWORDS V3

If you want to buy Wordworth but thought it too expensive buy this

one. Very similar but without speech synthesis and produced by Digitz.

only £37.99

PENPAL 1.4

Excellent best selling feature packed word publisher with database.

only £53.99

PAGESTREAM 2.2 Powerful DTP package that we recommend.

Better than a lot of DTP packages on a PC and better than most on a Mac.

only £126.99

Fonts pack £43.99

Hot Links.....£49.99

Pagesetter 2 DTP.....£42.99

Pro Page professional V3 DTP.....£49.99

Protect 4.3 W/P.....now only £39.99

Wordworth 1.1 word publisher.....£72.99

VIDEO AND GRAPHICS

DIGI-VIEW GOLD MEDIA SYSTEM

The complete graphics presentation package. Comes complete

with the famous Digi-Vinyl Gold, Digi-Paint and Digi-Performer

now only £119.99

37 Compugraphic fonts Vol 1.....only £9.99 each

37 Compugraphic fonts Vol 2.....only £9.99 each

Amiga Visio.....now only £29.99

Art Department Pro 2.1.....only £99.99

Can Do It V.I.G.....£93.99

Deluxe Paint 2.....now only £4.99

Deluxe Paint 3.....now only £12.99

Deluxe Paint 4.....now only £57.99

Deluxe Print 2.....£9.99

EXPERT DRAW.....only £49.99

EXPERT 4DJR.....only £37.99

Flexidump printer utility.....£31.99

Image V2.....£189.99

Pixmate.....£39.99

Pro Video Pins.....£139.99

Scale 500.....£79.99

TAKE 2 animation by ROMBO.....£44.99



The House That XCad Built

The above building was designed by Architect David Bishop, modelled by XCad and rendered with Imagine.

XCad

SPEED - An Amiga 600 is 6 times faster on zoom and redraw than AutoCAD running on a fast '386.

PRACTICALITY - Ideal for design in architecture, electronic and/or mechanical engineering.

COMPATIBILITY - AutoCAD DXF Import/export comes complete across the XCad range. Print to plotters, laser or dot-matrix printers.

MODULAR - Simple upgrade from XCad 2000 to XCad 3000.

XCad harnesses the incredible power of the Amiga to deliver a draughting tool to beat all others. Processing times are cut to a fraction of most PC based systems. Plans, designs and blueprints can easily be produced using simple, flexible menus or commands.

The XCad range starts from as little as £129 for XCad 2000 (1Mb RAM minimum) which includes both 2D Detailing and 3D Modelling plus automatic perspective views.

All trademarks acknowledged

Imagine

The 24 bit image above was completely originated on an Amiga computer. The drawings were designed with XCad, the 3D model was created from the 2D drawings and the 24 bit image (1280 x 1024 resolution) was rendered with Imagine. In fact this whole article was put together using Professional Page, XCad and Imagine. These Amiga products would amount to £777 (RRP), compared to AutoCAD, 3D Studio and Ventura on a PC which comes in at £5100 - and that's just for the software! Imagine 2.0 has a retail price of £269.

Never before has the Amiga been so well complemented. Never before has the Designer been given so much power, speed and flexibility at such an affordable price.

To order the Amiga's No. 1 CAD and rendering packages, contact your local dealer or call:

IN THE UK
DM SERVICES
Tel: (0702) 206165

IN EUROPE
DIGITAL MULTIMEDIA EUROPE
Tel: Belgium (32) 2 657 5803
Fax: Belgium (32) 2 657 5652



SPECIAL FX

Vista	£43.00
Image Finder	£43.99
Scenery Animator	£61.29
Deluxe Paint 4	£62.00
Deluxe Video 3	£69.00
Pro Vista	£71.00
Alter Image F/X	£94.95

VIDEO PRODUCTION

Big Alternative Scroller	£33.25
TV Show Pro	£49.99
TV Text Pro	£81.84
Font Pack 1 for Broadcast	
Titler 2	£83.60
Font Enhancer for Broadcast	
2	£83.60
Pro Video Post	£159.60
Broadcast Titler 2	£170.05

WE ARE A COMMODORE AUTHORISED REPAIR CENTRE, AND HAVE OUR OWN SERVICE CENTRES. WE CARRY LOT'S MORE TITLES, PLEASE CALL FOR DETAILS

B.C.M.

St. Andrews House
26 Brighton Rd. Crawley, West Sussex
Tel: 0293 821701

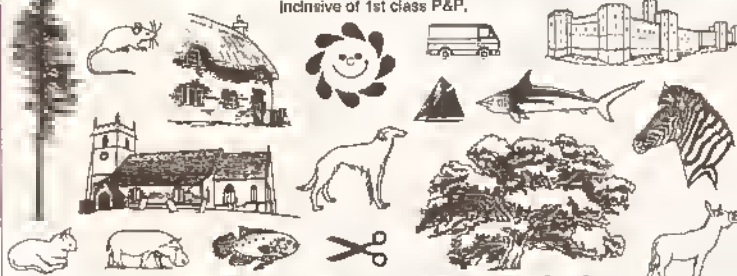
VISA

ARTWORKS CLIP ART

Each disk contains between 115 and 270 original, high quality, images for use with Amiga art and DTP programmes - Deluxe Paint, Pagesetter, Pro Page, Pagestream, Wordworth, Penpal etc.

1. Pets
2. Castles, cottages & Churches
3. Trees
4. Signs & symbols
5. Wild Animals

£6.99 each - Buy 3 or more for only £6 each - Over 900 images for only £30 inclusive of 1st class P&P.



Please make cheques/PO's payable to ARTWORKS
(Dept ASH) 1, Pond View, Wootton, Ulceby, S. Humberside. DN39 6SF ☎ 0469 588138
Orders normally dispatched within 48 hrs or immediately after cheque clearance.

ACCELERATORS UNLIMITED

P.O. BOX 87, LYTHAM ST ANNES, LANCS, FY8 5SP

TEL 0253 795796 FAX 0253 736035

OPEN 10AM TO 5PM MONDAY THURSDAY

Mail Order Only-Overseas Welcome Registered post or courier extra.

Prices include VAT ACCESS and VISA 040's a speciality

PROGRESSIVE PERIPHERALS

(U.K. Distributors for Progressive Peripherals & Software)

040 28mhz for 2000/1500 with 4 megs £1275

ZEUS 2000/1500 28 Mhz 040 With 4 Meg And Scsi £1750

Get 16 meg ZEUS with with fast SCSI 2 for £2075 saving £350

SUMMER SPECIAL 25 mhz 040 for 3000/3000T £899

MERCURY 28 Mhz 040 zero K For A3000/A3000T £1350

NEW 28 MHZ 040 FOR 500/500P With 4 megs £875

SUMMER SPECIAL get the additional 4 megs for £125

Works with 1.3 & 2.04 with 2.04 mounted on board, 68000 fast-back mode

works ALL hard drives tested.

VIDEO BLENDER the ultimate desktop video to rival the Toaster, with genlock,

unlimited video effects, and only £999

RAMBRANDT the much talked about 24 bit card now being shipped at

£2599 twin frame buffers, 16.7 million colours, 8meg high speed video ram, 24 bit

image capturing in real time

FUSION FORTY 040

28 mhz for 2000/1500 4 meg £999 + vat (£1174) next 4 meg £150 works with 16 bit ram

MAGNUM 040 by CSA

Like the PP & S ZEUS this comes with a Fast SCSI2 interface. It has the

option of fast Serial and Parallel ports (User installable) and

20 nanosecond SRAM Expands up to 64 meg.

28 mhz with 4 megs and SCSI £1799 33mhz version £2425

28mhz4 meg with Serial/Parallel ports added £1999 33hz £2599

PROFESSIONAL VERSIONS have addition 1 or 4 meg SRAM at 20 nanosecs

and all ports operational starting £2875 Call for prices/options

CALL TO FIND OUT HOW TO TRADE-IN YOUR CSA MEGA MIDGET 030 CARD AND GET AN 040

Full Range Of Scsi And Fast Scsi 2 Hard Drives Tape Streamers, Removable Drives And More P.O.A.

FULL RANGE OF GVP SOLD

Due to trading-up MMR 030 cards we will have some to re-sell with 1 years warranty so call to see what is available.

spent quite a while pondering how to approach this appraisal of Black Belt's *Imagemaster* software

because it's hard to know where to begin. What we have here is a hybrid picture compositor, animation tool, image processor, format convertor, paint program and more. I've spent the best part of a week just trying out features, checking the results of AREXX operations, compositing images and constructing animations and I've realised there's a lot of power in *Imagemaster*. At times the problem has been harnessing this power creatively and using it sensibly, as it's too easy just to go wild with all the new gizmos available.

Imagemaster is a descendant of the *Image Professional* software which was provided with the HAM-E display device, though it has been upgraded immensely and freed from the shackles of the HAM-E, in terms of output display and features. Where *Image Professional* was limited to working with the HAM-E, *Imagemaster* works with various 24-bit devices, DCTV and can display directly to the Amiga's RGB monitor.

Not only has the software been improved but there is now a real manual for it, though because of the constant upgrading and improvement policy which Black Belt operates there is also a substantial (50 sides of A4!) manual update supplied on disk to keep you up-to-date. The version of *Imagemaster* under scrutiny here is 9.11, though by the time you read this there is likely to be at least another upgrade!

But that's enough beating around the bush. Let's get down to business and get inside *Imagemaster*...

BUTTON CRAZY

The first thing to attract attention is the user interface, which has none of the familiar pull-down menus and is unique among Amiga user interfaces. *Imagemaster* is extensively button-based, and more banks of point-and-click gadgets appear in response to your actions. This *modus operandi* appears to be a necessary evil, as *Imagemaster* gains a lot of flexibility through this approach, even if it can be cumbersome, confusing and frustrating.

I well remember the early problems I had using HAM-E's *Image Professional* and for the first-time user *Imagemaster* is likely to be an equally daunting prospect, as navigation around the buttons can take some serious wetware training, though familiarity will come in the end. Otherwise the rest of *Imagemaster*'s user interface is reasonably straightforward and the file requesters should present few problems.

START SIMPLE

At its simplest, *Imagemaster* is an image processor, capable of applying hundreds of processing methods to a loaded image, from the mundane to the incredible. Simple actions such as brightness and contrast tweaking, colour correction, colourisation and gamma operations lead to more sophisticated concepts such as picture sharpening, blurring, anti-aliasing and clean-up operations. Further advanced are the special effects which include colour tricks like false colouring, contouring, solarising, posterising and line art, oil-paint and watercolour effects, relief mapping and palette shifting.

Finally there are the complex geometric transformations such as waves, explode/implode, perspective scaling, flipping, drooping and caricaturing, not to mention spiral blurs, zig zag, mirror and motion blur. Add resizing, zooming and shrinking factors, gradient fills, rotations, X-Specs support and you'll get some idea of *Imagemaster*'s capabilities and, while this might already sound comprehensive, I've probably only mentioned about half of the range of processing operators available.

GET COMPLICATED

A great deal of *Imagemaster*'s power comes from its ability to operate on a selected region of an image, and once again the methods of defining an area are wide. Simple selections such as dragging out a rectangle or an ellipse are quickly achieved. Freehand or polygonal areas can be similarly defined, or operations can be carried out only in areas of selected colours and shades – which can give effects similar to luma and chroma-keying in TV. Areas can be excluded from operations too, or the entire image can be selected. Multiple operations can be carried out on just one area by using the Previous Region button to add a new effect in the last area selected – and if something goes wrong there's always the UNDO button.

As you'll gather, there are many possible operators which can be running simultaneously, and sometimes it's easy to forget just what is going on at any one time.

INPUT AND OUTPUT

Imagemaster supports a variety of image formats, with more being added at every upgrade. All standard IFF formats can be loaded, plus JPEG/JFIF, HAM-E, DCTV, TARGA, NASA JPL, SHAM, ARZ, Black Belt's own PMBC exact image format, Impulse RGBN/RGB8, RAW and others. *Imagemaster* can even extract and load single frames from IFF animation files!

With *Imagemaster* what you see



No cutting and pasting here. Blending, colour masking and merging were some of the techniques used to composite together three different images with *Imagemaster*

Master of ART

Gary Whiteley enthuses over *Imagemaster* and shows you how to use lighting to effect...

ANIMATION BUILDING

If you are stuck trying to turn a Multi-Frame Sequence into an animation here's the way to do it.

Make sure AREXX is running on your Amiga, then select your frames from the Multi-Frame Sequence requester. Next click on the 'Set Scripts' button and type 'RXPI:ANIMWR1.REXX' into the Opening Script box. This will call an AREXX script from the rxpi: directory which should be in your REXX drawer and start executing the animation process. Unless you wish to process each image before compositing into the animation you can leave the Pre-Render box empty. Next type 'RXPI:ANIMWR3.REXX' in the Post-Render box and finally 'RXPI:ANIMWR4.REXX' in the closing script box. Return to the Multi-Frame menu and select Run List, choosing Test Run and Execute to see that all is well. If everything looks OK, run the list again, but this time select Save as 24-bit or Render Results (to save the images in the current output format) and take a break. Finally, use a program like View, ShowAnim or RTAP to see the resulting ANIM OP.5 animation, unless you saved only in 24-bit frames, in which case you'll need to put them together onto videotape.

By the way, in case you hadn't realised it, Multi-Frame could also be used to batch process pictures and convert them all to the same format – a very useful feature for animators wishing to convert different resolution images for use in their animation.

on the Amiga screen isn't really what you get. The simple explanation for this is that all *Imagemaster's* operations are carried out in 24-bit, even though the Amiga itself cannot display 24-bit graphics, so the computer display screen is only a good compromise. Within the limits of the Amiga's own output the screen mode can be selected by the user, but the resolution is always derived from the loaded image. So while an overscan 24-bit image can be loaded, it cannot be displayed in all its glory on-screen – rather a shrunken version will be produced to fit the Amiga screen mode chosen.

Dithering can be used to approximate the original image and a good-looking picture can be seen by using an Interlaced HAM display. But behind the scenes the data in the memory buffers remains in 24-bit. If you have a 24-bit display card such as Harlequin or Impact-Vision 24 you can use it to display the image in full, smooth, 24-bit colour. Several display devices are supported, and no doubt Black Belt will be adding more as soon as it possibly can.

Lastly, *Imagemaster* is as flexible on output as input. Data can be saved in a variety of formats. All the standard IFF modes are possible, plus 24-bit, HAM-E, DCTV, JPEG/JFIF, RGB8, TARGA, RAW, GIF, PMBC and ANIM OP-5 formats.

IMAGE BANKS

Let me explain how *Imagemaster* uses memory buffering in a little more detail. By storing pictures in available memory, a bank of images is ready for use in an instant. The visible image always consists of the contents of the Primary buffer, while the Secondary buffer is used as the second image in compositing operations. Other buffers may be held for use as memory allows and designated as primary or secondary as needed. Areas clipped from the primary buffer can also be held as Clip buffers.

The beauty of the buffering system is that a number of items can be held in the computer for fast access and operations, though again it can be confusing if you lose track of exactly what each buffer contains. To help the old grey matter sort this out the buffers can be named as you like, just as any other data file can,



This is how Gary Whiteley turned himself into the renowned composer Ludwig van Beethoven. As you can see from

and old and expired buffers can be selected for deletion to free memory.

MORPH AND ANIMATE

An entire article was dedicated to

images, or strange blobs of image would appear where they wouldn't be expected to. So, all in all I found morphing to be a bit of a hit and miss affair really. There, I told you I'd keep it brief!

Incidentally, I've heard rumours that a coming version of ASDG's *Art Department Professional* will also have a morphing feature, looks like the war is far from over.

FRAME SPLICING

Animation construction is another of *Imagemaster's* potential strengths. By using ARexx programs to control the loading

and processing of a series of pre-made or *Imagemaster*-generated frames, *Imagemaster* can paste together a seamless ANIM OP-5 animation file. If pre-made images are used then this is a cinch –

the documentation seems to assume that the user has an innate knowledge of the innermost workings of *Imagemaster*. OK, it isn't hard to use the Multiple Frame Sequence animation builder – but a little clearer explanation wouldn't go amiss! For those of you who need more enlightenment there's a box-out on page 69.

The same three ARexx programs which do the animation building can be used in more creative ways by interposing a fourth ARexx routine to process some aspect of the image sequence. Again, I must criticise the lack of explicit information from Black Belt here, as I wasted too much time trying out routines which often never worked as I would have expected. More (complete) ARexx examples, with better annotation would help. I admit that while I am no big-time programmer I do have a brain and I can figure things out if the instructions are OK. Now if only I can work out how to batch convert those RGBN files I'll be laughing...

More frustration was to come. I



With the filmstrip you can see where you've been by keeping a pictorial record of previous operations

Imagemaster's morphing feature in *Amiga Shopper* 15, so I'll keep it brief. Morphing is a process which lets you transform one image into another through a series of intermediate stages.

You've seen it on the box in Michael Jackson's *Black and White* pop video, in *Terminator 2*, etc etc and now it's appearing on a computer near you. It's a great effect that requires work and memory to achieve good results. I grappled with morphing for a good while and whilst I was pleased with some results, others left me wondering what (if anything) I was doing wrong, but the docs were of little help when it came to troubleshooting. The problems I was getting seemed to be that the morph was either becoming more like a cross-fade between the two

DON'T GET CONFUSED

Imagemaster is a 24-bit image processing system which operates on IFF and other format images. It is not a real-time video processing system – I say this as I've had some inquiries about how *Imagemaster* compares to the Video Toaster! Along with ASDG's *Art Department Professional*, *Imagemaster* occupies the high ground of Amiga image processing, being touted as competition for software such as Adobe Photoshop on the Mac.

almost as simple as selecting the files to be animated, defining the rendering format and leaving the Amiga to get on with the sticky part. It's just tough figuring out how to get it going the first time round because

read that a new Zoomclip function had been incorporated, making it possible to zoom into an image and animate the sequence, but the fragment of code provided just wasn't enough. Try as I might, I



Morphing isn't all sweetness and light – inexplicable things sometimes happen. Morphing from A to Z with a rather bizarre meltdown occurring



the above sequence of pictures, the effects which can be achieved are pretty striking. Da da da dahl

couldn't automate this function, though I had no problems zooming in frame by frame under manual control and animating the results.

All was not lost though, because after a lot of headbashing I did manage to master the Roll function – which lets an image (or a portion of one) be scrolled around the screen – proving that I could work out some of the effects, if the information was more or less provided!

I'd love to see more support for the ARexx side of things coming from Black Belt – whether it is self generated or simply the distribution of other people's public routines – because there is great potential here for doing fantastic batch operations and producing amazing results.

PAINT YOUR AMIGA

Did I mention that there's also 24-bit painting included in the software? And that it has font support, 2D and 3D rotation, clipping, lots of smooth range fills, and a variety of brush techniques to boot? I didn't? Well, now you know. Obviously, using the Amiga as a display device means that it isn't possible to paint in real-time 24-bit, as the display has to be converted to the current (non 24-bit) screen mode, but for many operations this isn't too much of a problem. Smoothly ranged backgrounds, for instance, can be easily produced in a variety of styles – radial, horizontal or vertical cylinders, dual ranged, warped or otherwise – ideal for backgrounds. Although *imagemaster's* paint features aren't friendly enough to replace those of dedicated software such as *TVPaint* they do provide a variety of tools for text compositing, colour fills, brush effects and so on, but on the whole the interface slows

down creativity and my overall impression was one of frustration, rather than elation at Black Belt's thoughtfulness.

SEPARATE ISSUES

Yes, there's more to come. *Imagemaster* has colour separation



A quick composite of scaled 24-bit images and text to show the effect of *Imagemaster's* Shadow function

facilities for turning full colour images into output-ready colour separations for inclusion in your favourite DTP program. Now, I don't pretend that I know a lot about this area of things, but with CYMK, CMK and RGB separations, plus ink mix correction, undercolour removal and output in 12 or 24-bit formats, plus CMAP (for colour previews) I should think that it would do the job, bearing in mind that the requisite dithering routines could already have been performed elsewhere in.

THE FILM STRIP

Another great thing about *Imagemaster* is its Film feature, which lets you have a small strip of

'film' on your Amiga screen. Each frame of this film can be filled with an image, usually derived each time the Primary buffer is changed. The result is a roll of tiny black and white images which can be played back just like a mini animation, letting you get an idea of how the full-scale

action is developing, or simply as a notepad for what you've been doing. A further bonus is that the film can be saved for later viewing – maybe useful as a notebook or storyboard. A colour film strip would be nice though!

SHADOW BOXING

To conclude my spin through *Imagemaster's* features I shouldn't forget a couple of other operations – Perspective and Shadow. Perspective operates on the entire primary image, giving rotation around all three axes and movement through the Z (front to rear) axis to produce an effect of depth. The result is a clip which can be used for compositing. Shadowing is just that – any clip which is composited will be shadowed according to the angle, offset and intensity of shadow setting previously determined.

Lastly, another gripe. There is a function called User Convolve, which appears to allow the user to define the matrix which operates on the selected area to make such changes as blurring, sharpening etc. This is a complicated matter, but to pass it off in the manual with the comment

"Using this function really does require an understanding of what a convolution actually is" and give no more explanation is daft. Black Belt, get your printed matter together!

WEALTH WARNING

Imagemaster is serious software and as such requires serious commitment to Amiga hardware. Because it holds 24-bit images in buffers a lot of memory is needed, with a bare minimum of 3Mb, though more is required for compositing large resolution images or multiple buffers. *Imagemaster* can eat as much memory as you've got and can handle images up to 32767 x 32767 in 24-bit if there's room! It's possible that *Imagemaster* could be run from floppies, but by the time you've loaded software, images and all, you'll be wishing you were using a hard drive! An accelerator comes in handy for shifting the huge amounts of data needed when compositing or manipulating 24-bit images. I recommend you upgrade to WB2.04 if you haven't got it yet, as *Imagemaster* runs much better under this – and you'll also get ARexx, which is almost obligatory for getting the best out of the *Imagemaster* software.

SHOPPING LIST

Imagemaster £175
by Black Belt Systems
Available from:
Amiga Centre Scotland, Harlequin House,
Walkerburn,
Peebleshire,
EH43 6AZ
☎ 089 687 583

CHECKOUT IMAGEMASTER

Documentation ●●●○○

Overly keen 'Try it out' approach; often short on detail and worthwhile tutorials.

Features ●●●●●

Brilliant – packed to the gills and more being added!

Usability ●●●●○

Quirky interface but not hard to use after some concentrated learning.

Speed ●●●●○

Needs mucho RAM and an accelerator to really fly, but then so do many 24-bit programs!

Flexibility ●●●●○

Extremely versatile, very flexible, but needs more practical examples.

Overall rating ●●●●○

A power tool for power users – not as elegant as *Art Department Professional*, but certainly a heavyweight, if sometimes capricious, image processor.



round about half way through the process

This series of images illustrates the basic use of lighting and its effects



Left: Lighting with the Key Light in direct line with the camera produces flat, featureless modelling
Middle: Moving the Key Light upwards and to the left improves the modelling but produces quite hard shadows
Right: Adding a softer Fill Light to the right of the camera reduces the harsh shadowing and reveals detail

MAKING LIGHT WORK OF 3D

While pumping out some Amiga graphics on a film set a few weeks ago I had a flash of inspiration. How about writing a piece on lighting for 3D? After all, real and virtual worlds have to be lit for the camera, and there's a lot of common ground in the techniques which are applied. Fortunately for the 3D modeller there are no generator trucks or huge coils of cable to clutter up the working environment, and no-one sweats in virtual reality, unless he's a Lawnmower Man. Bulbs don't blow and light can be cast for infinite distances – and the only electricity bill is the one you pay for your computer – a virtual 20000 Watt lamp costs no more to run than the image costs to render.

So, with the help of the disembodied head of Ludwig Van B and a chequered background, it's time for some light relief and a quick tour of some basic lighting techniques.

REAL WORLD LIGHTING

Whole books have been written about lighting theory, but space is tight, so I'll concentrate on some of the main elements.

Firstly, 3D objects in the real world need to be given a sense of shape, form and texture – this is often achieved through skilled lighting involving the correct

placement of lights for the subject matter – producing shadows to accentuate the features of an actor, for instance, and imparting atmosphere and depth to a scene. Many of the same rules apply in the virtual 3D world – making shadows to add depth, filling out dark areas and adding interest with colour.

Secondly, most 3D software offers a choice of lighting types and the ability to place a number of lights in a scene. The main restriction is that the more lights that are placed, the longer the rendering time will be.

THE KEY

The most basic lighting set-up consists of one light. Point it at the subject from next to the camera and a flat, insipid scene results. Move it slightly upwards and to the side of the camera and we see shadows and depth appear. This light is usually referred to as the 'Key' Light. It is the brightest and most important lamp, producing the main light. By moving it around special effects can be obtained which accentuate shadow and depth, but which can result in a stark, unnatural look.

THE FILL

To reduce any harsh effects a second light is generally placed to soften any heavy shadows and reveal detail concealed by them, without removing their modelling effect. Not

surprisingly, this light is termed the 'Fill' Light and it is often placed fairly symmetrically to the Key Light, but across the Camera-Subject axis and it is set at around half to a third of the power of the Key so as not to overpower its effect.

THE BACK LIGHT

In the real world, where most actors have real hair, a back light is often placed behind to add highlights to the hair and fill out unwanted shadowing. In the 3D world it's unlikely the actors will have any hair at all, never mind

Finally, a Back Light is added directly behind the head. In this case the effect is slightly overpowering

less, because it will be illuminated evenly from every direction.

OTHER LIGHTS

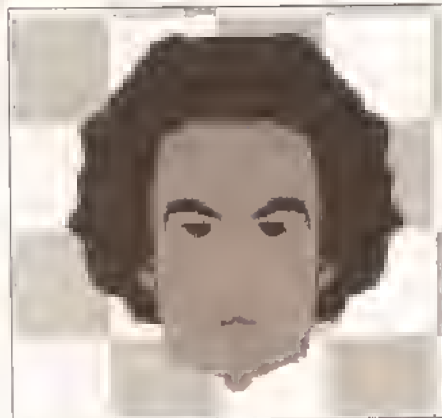
If your software allows the addition of custom-built or special lights such as spots, cylinders and diffused lights, so much the better. Take time to experiment, as lights can make or break a rendering or animation.

Remember that adding lots of lights will increase rendering times, even with an accelerator. For instance, the five images here took 9 minutes 51 seconds, 8:47, 13:57, 12:44 and 5:42 to render in 24-bit with *Imagine 2* at a size of 160 x 128 using an Amiga 2000 equipped with a 40MHz 68D30 card with maths co-processor and 4Mb 32-bit RAM. It would take 5 times as long to render each in 24-bit hi-res overscan.

In the images you see here the Key and Fill lights were spherical, shadow casting and diminishing in intensity with distance. The

Key was white and set to 500 units, while the fill was also white but set to 200 units. These lights behave similarly to the way real lights would. However, my Back Light breaks the laws of physics and neither diminishes with distance nor casts shadows. Such effects are only possible with 3D programs, and can simplify lighting setups.

There are many ways that 3D lighting breaks the rules – as you can't see the lights unless you make them visible. Try these techniques with any 3D program which allows the use of multiple lights. You might find yourself inspired. **AS**



What happens when the scene is lit just with ambient light. Yuck!

'real' hair, so the role of the Back Light is to add edges and highlights, removing more unwanted shadows.

AMBIENT LIGHTING

Ambient lighting is the last main constituent. In the real world ambient light – usually daylight – is balanced across a scene by large reflectors or powerful lights. In the 3D world ambient light can be used to add a touch of fill to areas not affected by the other lights. If ambient light is used as the sole light source the scene will appear flat and feature-

RECOMMENDED READING:

The Technique Of Lighting For Television And Motion Pictures by Gerald Millerson. Twenty years old and still a classic!

AMERICAS LARGEST SUPPLIER OF AMIGA CUSTOM CHIPS + UPGRADES

Prices
now include
VAT, Customs
and duty if any

8372A (PAL) 1 Meg Agnus	£31.30	6570-036 keyboard control chip	£8.75
8375 (PAL) 2 Meg Agnus	£39.50	A500 original P/S, 220 volts (no plug)	£40.25
1-3 Kickstart ROM	£19.70	A2000 original P/S, 220 volts	£64.20
A500 UK Keyboard-factory new (#312502-01)	£35.60	A501 original new 512K module	£17.50
5719 Gary	£10.44	A500 internal floppy drive	£46.00
8362 Denise 1 bright	£13.90	Panasonic 32k printer buffer chip	£9.00
1 x 4/80 Smart Column Zip	£15.60	Citizen 32k printer buffer chip	£12.40
8520A CIA (2MHz) Great price	£6.35		
A500 PC Motherboard-PAL, populated & tested (new low price) Rev. 3	£58.60		

UPGRADE YOUR A500 TO THE A500 PLUS - 8373 SUPER DENISE - £21.25

Advanced Amiga Analyse: Sophisticated but easy to use. Checks status of all data transmissions/signals, disk drive, ports, buffer chips, alignment, joystick + mouse. Checks status of read/write errors and tells what chips are bad, (hardware and software) A must for every Amiga service centre.	£42.50
McKay PLCC: (Burned clone) Agnus chip puller (sold by CBM for £32).	£9.50
The Final Test: Diagnostic diskette tests keyboard, display, graphics, Workbench, sound, timing, real-time clock, RAM, etc. (12 diagnostic programs in all)	£6.95
MegaChip 2000 by DKB: Upgrade your A500/A1500/A2000 to 2Mb of chip RAM. Includes 2 meg Agnus, chip puller & "Final Test" diagnostic diskette (no soldering).	£17.00
Buy the MegaChip from us and we'll give you the new Super Denise for	£17.00
SwitchIt by Global Upgrades Inc. Electronic ROM selector switch for 1.3 or 2.0. Makes all your software compatible. Keyboard or mouse controlled. Does not overlap the 68000 - allows for accelerator (2.0 compatible) very popular in the U.S. (includes dual-tone speaker for confirmation)	£19.50
Same as above but with 2.04 ROM installed.	£39.00

*2.04 Upgrade ROM only (PAL): No manual or diskettes. Ideal for multi-computer owners, schools, businesses, etc. £22.00

AdRAM 540 for A500 by ICD: Add up to 4 megs of RAM with battery backup internally in your A500. 1 Meg/2 Megs (install up to 4 megs)	£74.20/£95.15
AdSpeed by ICD: Best accelerator in its price range	£94.50
FileKit Free Video by ICD: Eliminates interlace flicker (new version)	£132.50
Microcard 600 by Microworks Ltd: Credit card size slot PCMCIA memory for the Amiga A500. Features of Microcard 600 are: Contains its own PCMCIA Controller, auto-configures at boot time and Microcard 600 memory is 20% faster than chip RAM. PCMCIA is the only way to really expand your Amiga 600 computer - Introductory Prices.	

DO NOT FEAR!
Buying directly from the U.S. with your credit card offers you the same protection as it does in the U.K. with the added benefit of saving lots of money. Deal directly with North America's largest distributor of custom Commodore & Amiga parts and chips. The Grapevine Group has been successfully servicing the U.K. and the Continent for 13 years. All our parts and chips are new and guaranteed for 90 days.

DEALERS - SEND YOUR LETTERHEAD FOR SPECIAL PRICES

PRICES JUST
REDUCED

THE GRAPEVINE GROUP INC.
3 Chestnut Street, Suffern, New York 10901 U.S.A.

International Fax: 0101-914-357-6243

Customer Order Line: 0101-914-357-2424

Telephone Hours: 1pm to 11pm Mon-Fri British time

Prices subject to change. **International Orders:** If your order is over £40 send or fax front of credit card. **Air Parcel Charges:** All chips - £5.36 Keyboard & PCBoard - £8.40 2.0 Kb - £22.62

GEORGE THOMPSON SERVICES

** Scalable Clip Art **

Another first from G.T.S. we now bring Pagestream 2.2 owners the opportunity to obtain high quality output clip art. The clip art on this three disk theme pack is fully scalable, may be ungrouped and edited then will print out to any printer. There are many images ranging from business to boats, lobsters to letters. Professional Page owners with postscript printers may import and print this clip art. Sample sheet of clip art and Compugraphic Type fonts available. A total of nearly 100 images

** Compugraphic Type Fonts Vol. II **

Our second theme pack of Compugraphic Type Fonts, are for use in many packages. Professional Page - all versions, PageSetter 2, PageStream V2.1+ (non-Postscript printers) and Workbench 2.0. This set consists of thirty fonts waiting to be used. Volume I still available.

COOPERHIGHLIGHT SLANT Kathlita **FRONTIER**
GraphicLight DANCE PoloSemiScript **BOSSCAPS**
TempoFont WindsorDemi **OswaldBlack**



George Thompson Services

Cucumber Hall Farm, Cucumber Lane,

Essendon, Herts. AL9 6JB

Telephone: (0707) 664 654



Both the above sets are available at £9.99 each.
(GTS Club members £9.45 each)

Please send a cheque (with your Bank card No. and Expiry Date on reverse), a PO or just telephone with your VISA or ACCESS details. Our Telephone lines are open from 9.00am to 4.00pm, answerphone 24hrs. All prices advertised include first class postage and packaging.

VIDEO USERS!

VIDEOWARE PRESENTS A NEW AND INNOVATIVE CONCEPT IN VIDEO TITLING THE VIDEOGOLD COLLECTION

12 Disks full of superb animations and effects to transform your videos into professional looking productions instantly!!

Mix and match the animations with your own text or use our specially designed brushes and animbrushes supplied to give you **ENDLESS** variations and cover **EVERY** occasion.

Designed by Graphic Artists, the volumes cover Weddings, Birthdays, Sport, Holidays, Parties, Children, Special occasions and much more!

All will run on Amigas with a minimum of 1 Meg and DPaint 3 or 4 and any other graphics or Multimedia program supporting anims/animbrushes.

Animated Wedding Album, Christenings, Animated Copyright Messages, Holidays and Places, Anniversaries, Christmas - You name it!!

AND THE PRICE? JUST £29.99 FOR THE 12 DISK COLLECTION

Don't worry if you have little or no graphics experience. The **VIDEOGOLD COLLECTION** comes complete with a full user guide to enable you to get the most from the disks - we even supply a hot-line for those who need further assistance.

Available from all good computer + video retail outlets - or direct from **VIDEOWARE**.

VIDEOWARE, DEPT (AS)

**50 HEATHER CLOSE, LOCKING STUMPS,
BIRCHWOOD, WARRINGTON WA3 7NX**

Or telephone 0925 851559 for further information, help or advice.

Please make cheques/PO's payable to **VIDEOWARE**.

Evesham Micros

JOINT WINNER OF
COMPUTER SHOPPER'S
*'Best Customer
Service'*
- AWARD FOR 1991 -

PRICES INC. DELIVERY & VAT @ 17.5%

Express Courier Delivery :
(UK Mainland Only) £6.50 Extra

HERE TODAY ~ HERE TO STAY

Evesham Micros First. First for choice, prices and service. Established for over nine years, with a strong financial status and secure future. Our Computerised Telesales Order Processing Investment means fast, efficient service. Well appointed Retail Showrooms with large product range on display. Our huge Customer database, high percentage of repeat business and excellent customer service are a testament to our policy. REMEMBER: when you need us, we will still be here. Our extensive expansion program means we could eventually be there as well.

HOW TO ORDER



Call us now on

0386 765500

TELESALES OPENING TIMES :
9am - 7pm Monday-Friday
9am - 5.30pm Saturday
10.00 - 4.00 Sunday



Send Cheque, Postal Order or
ACCESS/VISA card details to:

Evesham Micros Ltd.
Unit 9, St Richards Road
Evesham, Worcs. WR11 6XJ



ACCESS / VISA
Cards Welcome



Government, Education & PLC orders welcome
Same day despatch whenever possible
Express Courier delivery (UK Mainland only) £6.50 extra
Please note that 5 banking days must be allowed for
cheque clearance. Immediate clearance on Bank Drafts.

Mail Order Fax: **0386-765354**

Showroom opening times:
Mon-Sat. 9.00 - 5.30 Sun. 10.00 - 4.00

Unit 9 St Richards Road, Evesham
Worcestershire WR11 6XJ
☎ 0386 765180
fax 0386 765354

5 Glisson Rd, Comblidge CB1 2HA
☎ 0223 323898
fax 0223 322883
Corporate Sales Dept. • IBM dealer

251-255 Moseley Road,
Highgate, Birmingham B12 0EA
Tel: 021 446 5050 • Fax: 021 446 5010
Corporate Sales Dept. • Easy Parking

320 Witon Gate, Witon Court
Milton Keynes MK9 2HP
☎ 0908 230 898
fax: 0908 230 865

TECHNICAL
SUPPORT

☎ **0386-40303**
Monday to Friday, 10.00 - 5.00

1 YEAR WARRANTY ON ALL GOODS
All details correct at time of going to press - All goods subject to availability

AMIGA SOFTWARE			
Claris Wordworth	£99.00	MR Backup	£29.95
King Words 2	£37.95	AKOS	£37.95
Prostar V5.5	£120.00	HiSoft Lattice C	£199.00
Home Accounts V2	£49.00	GFA BASIC V3	£30.95
Deluxe Paint 4	£75.50	GFA BASIC Compiler	£34.65
Deluxe Video 3	£84.95	Compac R 15	£44.65

AMIGA 500 SOLDERLESS RAM UPGRADES

**A500 512K
RAM/CLOCK
UPGRADE**

ONLY £22.99
INC. VAT AND DELIVERY

ALSO WITHOUT CLOCK
FOR ONLY :
£17.99

★ CONVENIENT ON / OFF MEMORY SWITCH ★ AUTO-RECHARGING
BATTERY BACKED REAL-TIME CLOCK ★ COMPACT, ULTRA-NEAT DESIGN

**'A500 PLUS'
1 MB RAM
UPGRADE**

**THE FASTEST AND EASIEST WAY TO
UPGRADE YOUR A500+ TO 2MB RAM!**

Simply Plugs into trapdoor expansion area ★
Increases total RAM capacity to 2Mb 'ChipRAM'
★ RAM On/Off Switch ★ Compact unit size ★
Only 8 low power RAM IC's ★ High reliability

ONLY £37.95



1.5MB RAM BOARD

UPGRADE
TO 2MB FOR
ONLY £79!

Fully populated board increases total RAM in A500 to 2Mb! ★ Plugs
into trapdoor area, & connects to 'GARY' chip ★ Includes Battery-
Backed Real-Time Clock ★ Socketed RAM ICs on 512K / 1Mb Versions

Unpopulated RAM board with clock..... £ 34.95
with 512K installed.....£ 54.95 with 1Mb installed.....£ 69.95
RAM Board with 1.5Mb FASTRAM installed £ 79.00

N.B.: The expansion board
requires Kickstart 1.3 to
operate - Kickstart 1.3 upgrade
available from us for £29.95



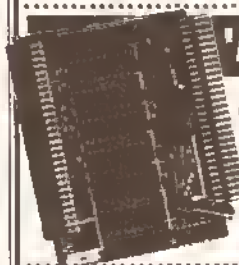
'MEGABOARD'

With our MEGABOARD, you can further
expand your A500's memory to a total of
2MB without disposing of your existing
512K upgrade (must be 4 x RAM-chip
type, or not exceeding 9cm in length).

ONLY £49.99

**CONNECTS TO YOUR
512K RAM UPGRADE
TO GIVE 1.5MB**

MEGABOARD needs Kickstart 1.3 to operate
(Kickstart 1.3 upgrade available from us for
£29.95). Installation requires connection to the
GARY chip. Easy to follow instructions provided.



A500 EXTERNAL 8MB RAM UNIT

- ★ Very low power consumption
- ★ Throughport for further expansion
- ★ Style matched to the A500
- ★ RAM access LED
- ★ RAM test/run switch
- ★ Available fitted with 2Mb, 4Mb,
or fully populated with 8Mb
- ★ Optional PSU (allows Amiga to power
other devices)



Incorporating the latest 'ZIP' DRAM
technology, our new External Memory Upgrade
allows the A500 / A500+ to be upgraded by up
to a further 8Mb of auto-configuring FASTRAM.

N.B. Any memory fitted to this unit is in
addition to that on your machine already,
to a maximum of 8Mb on the external unit

With 2MB fitted...£112.99 with 4MB...£159.99 with 8MB...£259.99

PARTIALLY POPULATED UNITS EXPAND TO 8MB WITH 2MB MODULES, AVAILABLE SEPARATELY AT ONLY £89.99 PER 2MB • OPTIONAL POWER SUPPLY £14.95

3 1/2" EXTERNAL FLOPPY DRIVES

AMAZING LOW PRICE !

£47.99
including VAT & delivery



- Quality Citizen/Sony
drive mechanism
- Enable / Disable switch
- Full 880K Formatted Capacity
- Long reach connection cable

- Very quiet
- Slimline design
- Suits any Amiga
- Cooling vents
- Sleek, high quality
metal casing
- Throughport facility for
addition of further drives

**REPLACEMENT A500
INTERNAL 3.5"
DRIVE KIT**

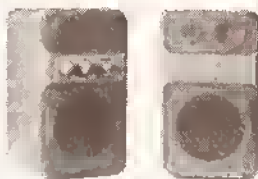


Fully compatible, with 1Mb
unformatted capacity.
Straightforward installation
procedure. Kit includes full
fitting instructions.

**ONLY
£39.99**

ZY-FI Amplified Stereo Speakers

REALISE THE TRUE SOUND POTENTIAL OF YOUR AMIGA WITH THIS PAIR OF FULL RANGE SPEAKERS!



Your Amiga produces fine quality hi-fi stereo sound. Enjoy quality stereo sound reproduction to the full with this new design twin speaker system. Incorporates a built-in amplifier with separate adjustable volume controls for each speaker unit. Runs from PSU (supplied) or from batteries (not included).
Speaker Dimensions 180x85x105mm (HxWxD)

ONLY £39.95

TOP VALUE 400dpi HANDY SCANNER

QUALITY SCANNING - AT THE RIGHT PRICE!

This Image Scanner package combines top quality hardware with the latest version of the distinctively powerful **DAATASCAN PROFESSIONAL VERSION 2** software, now giving TRUE GREYSCALE CAPABILITY. At a genuine 400dpi scanning resolution, this new scanner produces truly superb quality scans. Has a full 105mm scanning width, variable brightness control and 100 / 200 / 300 / 400dpi resolution. Daatascan Professional Version 2 scanning and editing software allows real-time scanning in either line art or in up to 84 simulated grey scales. Provides powerful editing features and excellent compatibility with most DTP and Paint Packages, eg. Deluxe Paint 4, Touch-Up.

ONLY £99.99

TRUEMOUSE

WE GUARANTEE that this is the smoothest, most responsive and accurate replacement mouse you can buy for the Amiga. Excellent performance, now with a 300dpi resolution. Amazing new price!

£14.99 SATISFACTION GUARANTEED

GOLDEN IMAGE OPTICAL MOUSE Amiga/ST compatible - excellent travel & accuracy assured. **NEW LOW PRICE! £29.00**

ROCGEN GENLOCK MK.II

OFFERING EXCEPTIONAL VALUE FOR MONEY, this fully compatible GENLOCK adaptor offers levels of quality, function and sophistication not normally available in this price category. Special features include the ability to record graphics & animations on video recorders and overlay graphic and text onto video. Capable of smooth and stable fading and overlaying effects with special tuning knob.

ONLY £79.99

ROCGEN PLUS

Compatible to any Amiga or Commodore CDTV, this NEW Genlock Adapter provides Advanced Special Effects and Performance Features without sacrificing user-friendliness! New Special Features include: Dual Dissolve control knobs providing freely adjustable degrees of overlay or invert (keyhole) effects, Auto Video pass-thru, extra Video throughput for unparalelled line monitoring, RGB pass-thru for real-time adding of Amiga graphics, plus Key-In port for use with an external keying device.

ONLY £119.99

PHILIPS 15" TV/MONITOR

With its dedicated monitor input, this model combines the advantages of a high quality medium resolution colour monitor with the convenience of remote control Teletext TV - at an excellent low price! Features dark glass screen for improved contrast, plus full range 3-way speaker sound output.

£269.00 Including VAT, delivery & cable

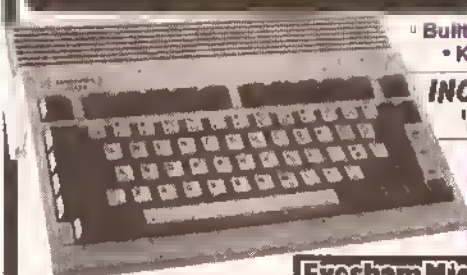
Philips CM8833 Mk.II Monitor (Genuine UK version), includes cable, 1 Year on-site maintenance and Lotus Esprit Turbo 2 game. **£199.00**

AS90 ADD-ON HARD DRIVES

AS90 OWNERS: Expand your hard disk storage further with one of our add-on, externally used SCSI Hard Drives, with 25mm autoloading NEC mechanisms and separate power supply. Plugs into the socket provided on the rear of the AS90 unit.
External 40Mb SCSI Drive cased with PSU to directly add-on to the Commodore AS90 **£249.00**
External 100Mb SCSI Drive cased with PSU **£399.00**

AMIGA 600

NEW LOWER PRICES !!



Built-in TV Modulator • Built-in IDE Hard Disk Controller • Kickstart 2 • 1Mb ChipRAM • Accepts Memory Cards

INCLUDES 12 MONTHS ON-SITE WARRANTY, 'DELUXE PAINT' & EXCITING GAME TITLE!

ONLY £279.99

2MB RAM/CLOCK VERSION £319.99

COMMODORE'S A600 20MB HARD DISK VERSION

£449.99 including 1 Year On-site Warranty

2MB RAM/CLOCK VERSION £489.99
N.B. Prices do not include Free Software

We are now able to supply Amiga A600's with larger hard disks. We take a standard single drive A600 and install a high quality 2 1/2" IDE hard drive.

SPECIAL HARD DISK UPGRADED MODELS

40Mb	80Mb	120Mb
£479.99	£549.99	£629.99

All models available with 2Mb RAM - Please add £40.00
- NB. The hard disk installation is not covered by on-site warranty

NEW FROM Evesham Micros A600 1MB RAM/CLOCK UPGRADE

UPGRADE YOUR NEW A600 TO 2Mb WITH THIS SIMPLE PLUG-IN MEMORY UPGRADE!

- ☆ Simply Plugs into the A600's trapdoor expansion area
- ☆ Increases total RAM capacity of A600 to 2Mb 'ChipRAM'
- ☆ RAM Enable / Disable Switch
- ☆ Battery-Backed Real-Time Clock

ONLY £44.99



NEW! A500 ROM SWITCHER

SWITCHING BETWEEN VERSIONS OF KICKSTART ON YOUR A500 IS EASY WITH OUR NEW ROM SWITCHER!

You can improve software compatibility on your A500 by fitting our ROM switcher. You can alternate between the Kickstart 2 already resident and another version of Kickstart ROM chip, giving you the freedom of choice. Fitting is very simple indeed, and requires no soldering or special technical knowledge. Fitting allows two methods of switching, either by keyboard reset, or by an external toggle switch. N.B. Kickstart ROM not supplied. A500 Revision 5A boards will require circuit modification.

ONLY £24.95

Kickstart 1.3 ROM supplied separately **only £29.95**
Kickstart 2.0 ROM supplied separately **only £39.95**
A500 Revision 5A PCB Circuit Modification Service **£29.95**

TRACKBALL

High performance trackball, directly compatible to any Amiga or Atari ST. Plugs into mouse or joystick port. Super smooth and accurate - you probably won't want to use a mouse again after using this Trackball! Full and hand-controlled. Top quality opto-mechanical design, giving high speed and accuracy every time. No driver software needed!

ONLY £29.95

REPLACEMENT A500 PSU

Genuine Commodore Amiga A500 type replacement Power Supply Unit. Good quality 'switch mode' type. Super low price!

ONLY £39.95

Amiga 500 Service Exchange Power Supply **£24.95**

STEREO SOUND SAMPLER

Offering full compatibility with almost any Amiga audio output package, our Sound Sampler features excellent circuitry, yielding professional results. The main A/D converter gives a digitising resolution of up to 50KHz, with a fast slew rate. Two phono sockets are provided for stereo line input, plus an input for microphone. Adjustable gain is achieved with built-in control knob. Complete with public domain disk containing sound sampling applications. Fullsize.

ONLY £29.95

MIDI INTERFACE

Our fully compatible, high quality MIDI interface connects directly with the Amiga serial port and provides IN, OUT & THRU ports for good flexibility. Features LED indicators on each port for diagnostic purposes. Superb compact design!

ONLY £19.95

VIRUS PROTECTOR

Our compact Virus Protector fits easily to the Port of the last disk drive in your Amiga system, protecting all internal and external drives from boot black viruses. Incorporates a switch to enable or disable the protection facility.

ONLY £6.95

VIDI-12 Amiga video digitiser package inc. VIDI-Chrome **£110.00**
VIDI Complete Colour Solution Kit **£149.95**
VIDI-RGB colour frame generation kit from B&W images **£4.00**
Amiga 500 Dual Cover **£4.95**

PRINTERS

Prices Include VAT, Delivery and Connection Cable

Gold Star REGISTERED DEALER

EVESHAM MICROS STAR PRINTERS INCLUDE 12 MONTHS ON-SITE WARRANTY

STAR LC20 9-Pin Printer

SUCCESSOR TO THE BEST SELLING LC-10, WITH MANY FEATURES AND FAST OUTPUT

Providing superlative paper handling, four excellent NLQ fonts and a new super-fast print speed of 180cps in draft and 44 cps in NLQ, the LC20 appropriately supersedes the phenomenally successful LC10!

ONLY £129.99

Star LC24-200 COLOUR Printer

COMBINES HIGH QUALITY 24-PIN COLOUR PRINTING WITH EXCELLENT VERSATILITY - AT A BUDGET PRICE!

- 24-Pin 7-Colour Printer
- 200cps draft / 67cps L.Q.
- 220cps High speed draft for Italy
- 30K Buffer expandable to 62K
- Swivel Selectable Push or Pull Tractor, with bottom feed capability
- Advanced Paper Parking
- Electronic Dup Switches
- 10 Resident LQ fonts
- Includes Colour Ribbon

ONLY £269.99

Star LC 200 9-Pin Colour, 4 fonts, 180/45cps **£299.99**
Star LC 24-20 24-Pin, 4 fonts, 180/60cps **£209.99**
Automatic Sheet Feeder for 10" LC printers (pls state model) **£64.95**
Star XB24-200 COLOUR 24-pin, 80 ual, power printer **£359.00**
Star XB24-250 132 column version of XB24-200 **£439.99**

Citizen Swift-24E including COLOUR kit **£299.99**
Olivetti JP-150 Inkjet good quality - excellent value **£249.99**
Olivetti JP-350 Inkjet excellent high speed 300dpi printer **£249.99**
Hewlett-Packard Deskjet 500 **£259.99**
Hewlett-Packard Deskjet 500C (Colour) **£299.99**
Citizen Projit Inkjet Printer **£299.99**
Epson LX400 budget 10" carriage 9-pin 180/25cps **£139.00**
Epson LQ100 24-pin 180/60cps, 8K buffer **£285.00**
Panasonic KXP1124I uprated 24-pin model 300/100cps **£279.00**
Panasonic KXP2123 good value 24-pin colour model **£295.00**

Evesham Micros • ALL PRICES INCLUDE VAT & DELIVERY • Evesham Micros • ALL PRICES INCLUDE VAT & DELIVERY • Evesham Micros

KCS Power PC Board

PC EMULATION FOR YOUR AMIGA

About...

The KCS Power PC board is a complete #11Mhz 1Mb PC sub-system that can be fitted to any Amiga in minutes.

Based around NEC's highly successful V30 CPU, the Power PC Board offers a very high degree of compatibility at machine language level, yet runs faster than an equivalent Intel 8086.

The 1Mb of Autoconfig™ memory can be accessed by all current Amiga models including the A500 Plus. Even the original A500 can access 512K as a standard expansion with clock; plus a 512K RAM disk.

Adored by critics and users alike, the KCS Power PC Board is a real alternative to buying a complete PC clone.

Installation

The KCS Power PC board fits to any Amiga in minutes:

- On A500 and A500 Plus machines it simply slides into the trapdoor expansion; and doesn't invalidate your warranty!

- On bigger Amigas, such as the 1500/2000/2500/3000, it drops into a vacant Amiga slot using the custom designed adaptor board.

- Once fitted, your Amiga can be switched into PC mode simply by clicking an icon. Just reset and it's an Amiga again.

No fuss, no hassle. Just two machines in the space of one.

Video

- Supports the majority of EGA and VGA modes in 16 glorious colours and monochrome - graphics up to 640x480 and text too. Interlace is required for some modes but a software flicker fixer is built in.

- Other video modes include MDA and CGA text and graphics. Also supports Tandy colour graphics adaptor and Hercules monochrome.

- EGA and VGA graphics can be displayed on a domestic TV or monitor. Unlike real PCs, no extra hardware is required.

Disk

- Up to four Amiga drives can be connected to your system and accessed in PC modes as 3.5" 720K or 5.25" 360K. Typical disk access is at least twice as fast as most real PC clones!

- DOS can be started from any mounted drive 5.25" or 3.5" and most Amiga hard drives.

- Supports most popular hard disks including GVP Impact, Supra and A590 (Omni and SCSI).

- A massive 200K ramdrive (up to 8Mb with expansion) is available in PC mode and it's PC-reset proof too.

Memory

- Even with a base Amiga 704K is free for DOS programs (640K in EGA and VGA modes).

- EMS (expanded memory) is supported

allowing you to run Microsoft Windows without problems and store massive files in Lotus 1-2-3. So, if you have 8Mb on board, the PC can use it.

- XMS (extended memory) is supported - even though this is not usually possible on NEC V30 machines.

Speed

Its landmark speed puts it way ahead of many true PC systems - it even compares favourably with many AT clones.

However, the crux of the matter lies with the video speed; and this, as many critics have noted is where the KCS Power PC Board scores over all others. It's no use having a wizz-bang processor if the screen takes several seconds to redraw itself.

- Tests in text modes have shown it is several times faster than even AT clones with dedicated video hardware. Even in graphics modes, it's no slouch although the emulation is limited by Amiga hardware.

- Add a processor accelerator card, and the 32-bit clean KCS cache software will use it to its full advantage.

Mouse

- Automatic serial mouse emulation is supplied as standard - using your existing Amiga rodent.

- Mouse can be configured as COM1 or COM2.

Joystick

- Up to two sticks can be employed at any time. You decide how they are arranged.

Printer

- Your Amiga's parallel port is accessed as LPT1 in PC mode.

Serial

- DOS usually supports two serial ports, but one is taken by the Amiga mouse. The Amiga's serial can be set as COM1 or COM2 as desired, ie for MODEM etc, up to 19200 baud full-duplex.

Sound

- PC sound is supported, but there's an additional volume control available in software.

Works On...

- All Amigas (except the A1000) fitted with Kickstart 1.2 and Workbench 1.2 or higher.

- Extra memory is not required, but full use will be made of extra hardware, like accelerators, flicker fixers, moderns etc.

Help!

- We want you to get the most out of your system so we offer a comprehensive, free telephone helpline service to all registered users.

Updates...

- Since the hardware is a complete PC in its own right, all updates are completely software driven. Registered users can update at any time for a nominal fee to cover media and shipping costs.

"PC emulation is a contentious issue - but the KCS Power PC board is the only one to carry my personal recommendation. It is an excellent product that does all it claims and does it well."

comments Mark Smiddy, co-author of Mastering AmigaDOS 2.

PRICE

including MS-DOS and on-board memory £219.95 inc VAT/Carr
Excluding MS-DOS but incl on-board memory £189.95 inc VAT/Carr
Adaptor for 1500/2000/3000 £74.95 inc.

AVAILABLE FROM YOUR LOCAL COMPUTER SHOP

(IF NOT - ASK THEM WHY NOT) OR DIRECT FROM BITCON.

BDL

BITCON DEVICES LTD.

88 BEWICK ROAD, GATESHEAD, TYNE & WEAR,
NE8 1RS ENGLAND

TEL: (091) 490 1919, HELPLINE (091) 490 0202

FAX: (091) 490 1918



Compatibility is excellent but no-one can guarantee every single program available, therefore if your purchase depends on a particular program, please ask us first or send in a copy of the program. (With suitable S.A.E. if to be returned). Price subject to change without notice.

Australia: HPD (Tel) 08 349 8486. Kaotic (Tel) 03 879 7098. Spalo Discover Int. (Tel) 957 47 89 38.
Sweden: Delikatess-Dana (Tel) 31-300580. Canary: Customs Chipz (Tel) 928 271064. Denmark: Beron (Tel) 31 31 02 73. Portugal: Softclub (Tel) 01 352 8452. Ireland: Computer City/Dublin 745250. N. Zealand: Pizac (Tel) 054-82949.

All trade enquiries welcome. UK and Overseas (PAL only)

WHOLLY DEVELOPED AND PRODUCED IN THE NETHERLANDS.

MUSIC

Miracle Keyboard.....£289.00
Sound Enhancer Plus.....£36.99
Break Beat (All Volumes)...CALL
Sequencer 1£19.95
Sequencer 1+£39.95
The Hit Kit£24.95
The Sampler Series.....£9.95 ea
Full Set.....£39.95

All DRT's

Music: X. Jar.....£20.00
Tiger Cub.....£89.99
Fine Line.....£260.00
Synchro Pro£475.00
Midi Man£120.00
Mini Mixer£84.00
Super Jam£89.99
Bars and Pipes£138.00
Bars and Pipes Pro.....£250.00

GVP HARD DRIVES

A500-HD+ 52Mb
(unpopulated).....£339.99
A500-HD8+ 120Mb
(unpopulated).....£454.99
A500-HD+ 240Mb
(unpopulated).....£719.99
Rochard 52Mb.....£329.99
Rochard 105Mb.....£439.99
Rodec (Controller Only) £154.99

WE ARE A COMMODORE AUTHORISED REPAIR CENTRE, AND HAVE OUR OWN SERVICE CENTRES. WE CARRY LOTS MORE TITLES, PLEASE CALL FOR DETAILS.

B.C.M.

ST. ANDREWS HOUSE

26 BRIGHTON ROAD, CRAWLEY, WEST SUSSEX

TEL: 0293 821701

MAGIC CLIP-ART COMPANY

Output to your Printer's
HIGHEST RESOLUTION

for
STUNNINGLY
SHARP
IMAGES



QUESTION: What happens if you create PROFESSIONALLY DRAWN Line-Art images at 400 D.P.I., and then convert them to 16 shades of grey?

ANSWER: You get brilliantly clear and crisp images that you can ENLARGE with little or none of those dreaded "JAGGIES"

CONTEMPORARY SILLOUETTES	HUMOROUS ANIMALS	FUNNY ATTENTION GETTERS
4 Disk Collection of People and Places	4 Disk Collection of Cartoon Images	3 Disk Collection of Cartoon Captions
SPORT	Terrorific	RECREATIONS
4 Disk Collection covering most Sporting Activities	1 or more Disk £5.99 each 4 or more Disks £4.99 each	INSIDE+OUTSIDE 4 Disk Collection of Puzzles and Pastimes

Please note that all Prices include 1st class P+P.

If you wish to order only PART of a Collection then please state Disk A, Disk B, Disk C, etc etc

PLEASE MAKE CHEQUES OR POSTAL ORDERS
PAYABLE TO: D.B. + M.A. HILLS.
PLEASE ALLOW UP TO 3 DAYS FOR CHEQUES
TO CLEAR

Original and compatible
with all DTP, ART and
WORD PUBLISHING
Programs

MAGIC CLIP-ART CO.
84 THORPE ROAD,
HAWKELL,
Nr HOCKLEY, ESSEX. S55 4JT.

Reach the top with.....

LCL Self-Tuition Courses

World leaders • Hons graduate/teacher authors • In educational software charts.
• Excellent reviews • £5 off total for 2, £10 off for 3.



MICRO GERMAN (Beginners - GCSE & business)

NEW

Complete course with real speech, adventure game and business letter generator.
24 programs + a book and manual. Superb graphics & music. £24

MICRO FRENCH (Beginners - GCSE)

Complete course with real speech & graphics adventure game, 24 programs + a book and a manual. Superb graphics and music. £24

MICRO MATHS (11 years - GCSE)

Best selling GCSE maths course in UK. For ages 11 upwards in 24 program options plus a book and manual. Superb graphics and music. £24.

MICRO ENGLISH (8 years - GCSE)

Complete course. Also for EFL. Teaching spelling, reading, writing and oral with real speech, 24 programs and a book and a manual. Superb graphics and music. £24.

PRIMARY MATHS COURSE (5-15 YEARS)

Complete course with full screen colour graphics. NATIONAL CURRICULUM (Levels 1-4). 24 programs + a book and a manual. £24.

READING WRITING COURSE

NATIONAL CURRICULUM (A.T. 1-5) 24 program course teaching reading, writing & spelling with a book, manual and voice tape. £24.

MEGA MATHS (A level course)

Step-by-step course of 24 programs + a book and manual. Full screen graphics for calculus. £24.

A500 PLUS
OR AMIGA

PHONE NOW
FOR
IMMEDIATE
DESPATCH

(* LCL courses are compatible with the N.C. where appropriate) Most LCL courses run on most computers (PC, ST, Arc etc). Send cheques/PO's (+99p P&P) or phone orders or requests for free colour poster/catalogue to:

LCL (DEPT AMS), THAMES HOUSE, 73 BLANDY ROAD, HENLEY-ON-THAMES, OXON RG9 1QJ



or ring 0491 579345 (24 hrs)



Most MIDI event filtering and editing can be done by the sequencer either as the data is received or after the data has been stored. There are times however when it is quite useful to have external real-time editing of the MIDI data stream. Some Yamaha PSS synthesizer users for instance, namely those who suffer from the MIDI echo problem mentioned in previous installments, can benefit by filtering out data on specific MIDI channels. On the other hand you may simply want to add more sophisticated MIDI functions to your synthesizer or just be in a position to carry out more specialised filtering operations as and when particular situations demand it. One solution is to add extra hardware which allows you to manipulate the data coming from your synthesizer – the two QuasiMidi units I've chosen to look at this month are designed to offer just this sort of flexibility...

QUASIMIDI'S ESMERALDA

Esmeralda is a general MIDI toolbox unit which can function as a master keyboard controller, a MIDI filter, a MIDI converter and a MIDI transposer. The Esmeralda unit measures 170mm (length) x 110mm (width) x 35mm (height) and has a top panel which contains an LCD display plus a bank of editing and mode selection controls.

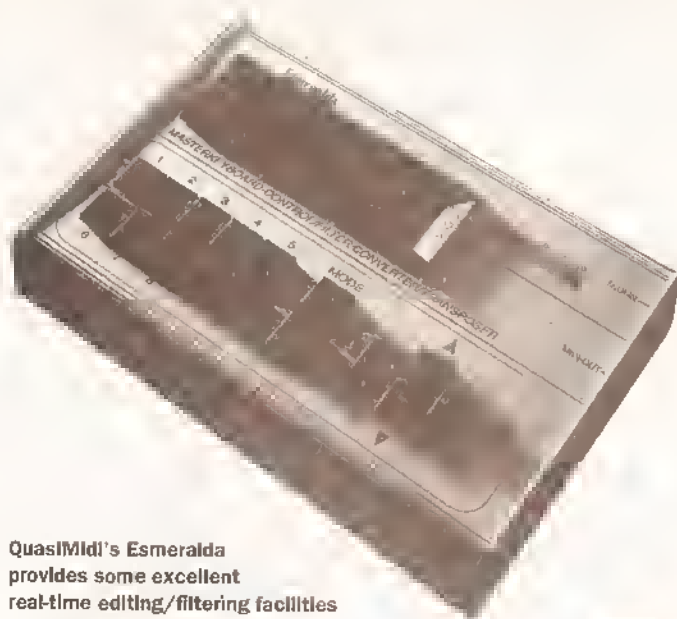
The unit itself is externally powered and requires to be driven by a 9v adapter, but an internal battery ensures that settings stored in Esmeralda's memory are retained.

The power switch, adapter power-in connector, and the MIDI In/Out terminals are all situated on the right-hand side panel.

As far as use goes, Esmeralda provides quite a range of master keyboard options, program change transmission, channel conversion, MIDI filtering, velocity curve and transposition facilities. Esmeralda's master keyboard function, for instance, enables you to add facilities that are normally only found on the more expensive

synthesizers and master keyboards. For a start it enables you to define the upper and lower note limits of four overlapping zones and this effectively allows you to split your keyboard into four totally different sections (up to 128 named master programs can be created which specify a zone, a MIDI channel, a note range and a program change number). The net result is a substantial increase in flexibility: Data from a single Incoming MIDI channel could, for instance, be split into zones which are then automatically rechanneled and used to control four separate synthesizers or expanders.

Very often you'll find that although you have transposed your MIDI keyboard the expanders remain in the original key. Esmeralda can solve that problem by changing all



QuasiMidi's Esmeralda provides some excellent real-time editing/filtering facilities

Keyboard to Back

four zones to the key of your choice – in other words, it will read your channel-specified incoming data, possibly split the data (according to your chosen program) and then transpose each zone by the required number of semitones. Another useful function is the dual channel conversion. At any one time you can convert any two MIDI channels into two other channels.

DATA FILTERING

Esmeralda's data filtering options are similar to those found on most sequencers but of course in this case the data is filtered out as the MIDI messages pass through the unit. MIDI velocity, program change, pitch-bend, channel aftertouch can be filtered out as can mod-wheel, breath controller, and other controller messages. All notes off, active sensing and MIDI clock messages can also be removed.

Admittedly, not all facilities are useful to all users (velocity curve facilities for instance are provided but these are only of use if you have a touch sensitive keyboard).

On the whole however there are sufficient built-in goodies to make the unit generally useful and a

Don't get the hump with MIDI... Paul Overaa reviews two great pieces of QuasiMidi kit and gives a guide to sequencer file conversion

JARGON BUSTING • JARGON BUSTING

Editing/Filtering – To edit means to alter, to filter means to remove. There are however a few variant terms that do cause confusion: Real-time editing means performing editing and filtering operations at the time the MIDI messages are flowing through the unit doing the editing. Some sequencers provide pre-record edit/filter options in which the sequencer alters or removes certain events (in real-time) prior to storing them in a sequence. Editing a sequence after it has been recorded is then usually called post-record editing. Direct data file sequence editing is another term you'll encounter from time to time – some utility programs can read and change sequences directly from the data stored as a disk file.

Event – Most events are basically a sequencer's equivalent of a MIDI message with other information, such as an 'event time' tagged on. Sequencer files usually contain sequencer-specific non-MIDI events as well (for representing things like cue marks, transposition details, tempo settings and so on).

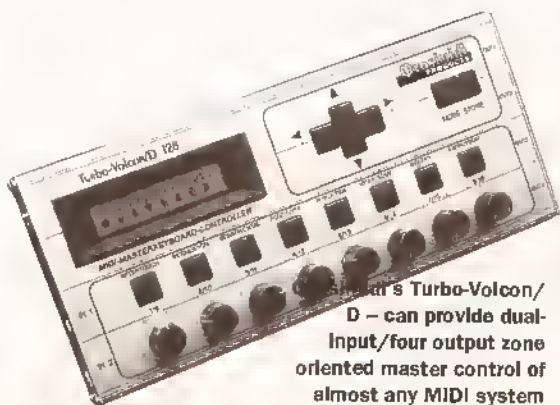
External Clock – Sequencers can either use their own internal timing routines or get their timing from MIDI messages (known as MIDI clocks) inserted into the MIDI data stream by some external unit (such as a drum machine or another sequencer). In these latter cases the sequencer reading the data is said to be using an 'external clock'.

File header – Some initial information provided at the start of a data file.

Remapping – In the MIDI sense this means either changing all occurrences of one event value to another (as in the case of drum note remapping) or changing one event type to another.

Roland MT32 – A popular early Roland expander unit which provided drum facilities.

Yamaha RX21 – One of Yamaha's early drum machines.



Turbo-Volcon/D – can provide dual-input/four output zone oriented master control of almost any MIDI system

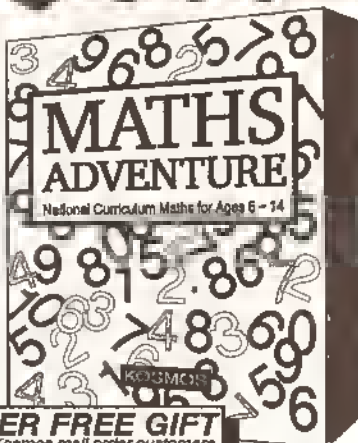
continued on page 79

INCREDIBLE NEW RELEASE

FOUR GREAT GAMES

and all this Maths revision...

Times Tables
Addition
Subtraction
Multiplication
Division
Fractions
Decimals
Using calculators
Shape & Space
Money problems
Measurements
Number patterns



SUPER FREE GIFT
only for Kosmos mail order customers
**CASIO SOLAR
CALCULATOR**

AMIGA MATHS ADVENTURE

For ages 6 - 14

Price £25.99 inc. VAT

Now available from your dealer or direct from Kosmos.

Write or telephone for our new FREE 16-page colour brochure of Educational and Leisure software (Please state computer type)

Kosmos Software Ltd, FREEPOST (no stamp needed)

DUNSTABLE, Beds. LU5 6BR

Telephone 0525 873942 or 875406



AMIGA CONSOLE UNIT
Monitor console and keyboard unit.
Second drive space.
No hard drive restrictions
Power supply or modulator space
Keeps cables tidy.
Non-magnetic aluminium.
High quality texture finish.
Plenty of ventilation.
Installed in minutes.
Designed specifically for the A500
and 500+
Colour co-ordinated.

YOUR AMIGA
LIKE THIS FOR ONLY

£34.95 including postage
& packing.

A REAL SPACE SAVER!

100's of satisfied customers.

Available directly from:

KONTAX COMPUTERS

11a Waldeck House

Waldeck Road

Maidenhead,

SL6 8BR

0628 773212



Amiga-64-Link

● Links C64 peripherals to Amiga parallel port ● C64 Not required

Connects C64 printers to the Amiga

● Supports MPS, DPS, VIC, Star, Brother, Seikosha & Citizen printers
● Graphics output on dot-matrix printers ● Works with all software

Transfers C64 disk files to the Amiga

● File transfer programs ● Read/Write text, binary & program files

Standard "Ami-64-Link" £35.25

Prices include VAT and delivery

Budget "Ami-64-Link" £23.50

Budget stops multi-tasking during printing



York Electronic Research (0904) 610722

The Paddocks, Jockey Lane, Huntington, York YO3 9NE



AUTHORISED DEALER FOR * AMIGA * STAR *

AMIGA (UK MODELS ONLY)

Amiga 1500 PLUS with Kickstart 2.0/WB 2 & S/WARE £539.00

Amiga 1500 DOUBLE with 1.3 and 2.04 ROMs Mouse Switched £579.00

8Mb RAM Board for A2000 Pop 2.4/5/8Mb £139/£189/£239/£289

Supra RAM 500RX 8Mb for A1000/A500/Plus Pop 2.4/8Mb £129/£199/£339

A2388 20MHz 386SX Bridgeboard (NEW) £429.00

PRINTERS

Star LC-200 £135.00

Star LC-200 Colour £195.00

Star LC24-200 £199.00

Star LC24-200 £219.00

Star LC24-200 Colour £269.00

Star XB24-200 24 pin Colour £398.33

Star StarJet SJ-48 Bubble Jet £235.00

MONITORS

Commodore 1084S-D2 Stereo 0.42mm Dot Pitch (NEW) £229.00

Philips 8933-II Stereo + F19 and On-site Maintenance 0.42mm DP £209.00

DISK DRIVES

GVP Series II 52Mb for A500 £329.00

GVP A530 52Mb Drive + 40MHz 030 Accel + 1Mb 32-bit RAM £559.00

Rocline Super Slim Amiga Ext. 3.5" p&p £2 £59.95

A2000 Internal 3.5" p&p £2 £59.95

A500 Replacement Internal 3.5" p&p £2 £59.95

MISCELLANEOUS

AlfaScan Plus Hand Scanner 256 Grey Scale p&p £2 £139.00

AlfaScan Plus with OCR software p&p £2 £249.00

Commodore A2220 Display Enhancer p&p £2 £219.00

KCS PC Board for A500 Inc. MSDOS 4.01 p&p £2 £199.00

KCS PC Board for A500 without MSDOS p&p £2 £179.00

KCS A2000 Adapter p&p £1 £69.95

Alfa Data Mouse with Mat and House p&p £1 £19.95

CHIPS

Kickstart V2.04 ROM for A500/2000 free p&p £35.00

Kickstart V1.3 ROM for A500/2000 free p&p £25.00

Super Danes 8373 (For New Graphics Modes) free p&p £30.00

1Mb Fat Agnus 8372 free p&p £35.00

CIA Chip 8520 free p&p £13.00

1Mb SIMMS for GVP/Rocline Drives free p&p £25.00

2Mb DIPs for SupraRAM 2000 free p&p £50.00

ALL PRICES INCLUDE 17.5% VAT. CARRIAGE £7
Prices subject to change without notice. E. & O. E.

New Low Price Amiga 600

A600 with Game & DPaint III £279

A600 with 20Mb Hard Drive £459

(Prices include On-Site Malntena
32nce)

Supra WordSync 2000 Drives

52Mb Quantum LPS 11mS with 64Kb Cache £239

105Mb Quantum LPS 11mS with 64Kb Cache £349

The WordSync/Quantum combination is one of the fastest
drives available for the Amiga.

Commodore 1960 Multiscan Monitor £435

0.28mm Dot Pitch Max Res 1024x768

Suitable for A500/A1500 ALL Amiga Colour Modes

Delta Pi ROM Sharer £19.99

Simply use the left button to select ROM.

Kickstart 2.04 ROM £35

Kickstart 1.3 ROM £25

(Includes P&P)

Delta Pi Software Ltd

8 Ruswarp Lane, WHITBY, N. Yorks YO21 1ND

TEL/FAX: 0947 600065 (9am - 7pm)

VISA

MasterCard

continued from page 77

number of nice extras, such as a tempo mode which allows you to display the tempo of the incoming data in beats per minute and sysex facilities for dumping and loading Esmeralda's internal settings.

QUASIMIDI'S TURBO-VOLCON/D

The Turbo-Volcon/D is another sophisticated QuasiMidi unit which permits up to eight independent, overlapping, keyboard zones distributed between two MIDI keyboards. Two MIDI-INS and four MIDI-OUTs are provided and the main use of the unit is as a programmable zone-splitter/MIDI-router come real-time performance controller. Sizewise it's a little larger than the Esmeralda unit (255mm (length) x 110mm (width) x 35mm (height)) but it follows the same basic design ideas built around the manipulation of menu selected items identified on an LCD display. Again a 9v power adapter is required and internally stored data is protected by an internal battery.

The Turbo-Volcon/D also has 128 master program slots and for each zone of a master program you can set slave assignment, keyboard zone, slave program number, MIDI volume, a transposition value, controller, velocity split and velocity-curve characteristics.

DIALS FOR DESIGN

Eight rotary dials control aftertouch, modulation, breath control, portamento time, MIDI volume, pan and expression characteristics and the current levels can be displayed on a bar graph for all 16 channels. The Turbo-Volcon/D also features an 'easy program' facility which allows sysex messages to be transmitted for a large number of popular synths.

Obviously this type of unit is designed with serious users in mind and you would need a fairly comprehensive MIDI set-up before many of the facilities became really useful. Nowadays however many MIDI musicians do build up quite sophisticated MIDI studios and obviously in these situations the extra facilities provided by intelligent MIDI editing and controlling units, such as those offered by QuasiMidi, do become very useful.

SHOPPING LIST

QuasiMidi Esmeralda £219.99

QuasiMidi Turbo-Volcon/D. £319.99

Available from:

BCK Products

136 Hornchurch Road

Essex RM11 1DP

☎ 0708 448799

SEQUENCER FILE CONVERSION

Paul Overaa takes a look at MIDI event editing with a scheme aimed at the programmers out there

Despite the fact that most sequencers use different internal file formats, it has become increasingly easy to read MIDI data across from one sequencer to another. Even if you have a sequencer that doesn't allow MIDI file sequence import and export all is not lost... you borrow a second machine, join them with a MIDI cable then 'play' one sequencer whilst you record with the other. Providing you make sure that the sequencer which is recording is set to read external clock data you'll have new files with the same bar alignment as the original files.

Prior to GS type standardisation, which we discussed last month, some sequence editing was usually required when using other people's sequences and similarly a change in synthesizer or addition of a new expander unit also meant that a few program change numbers or controller values would need to be altered. Most users can do this directly from their sequencers but there are times when, because of either sequencer editing limitations or because of the sheer number of sequences that need to be altered,

some alternative approach needs to be found.

Suppose, for example, someone gives you some disks containing hundreds of sequences but in order to use them you need to perform some global editing operations on all of the sequences (using the one-by-one approach required by most sequencer programs can take a lot of time). In trying to solve problems like this we enter the domain of experienced users who can solve any editing or portability problem that comes along – in other words we enter the domain of the true MIDI/music hacker!

STANDARD STRUCTURES

In previous installments I've talked about aspects of MIDI/music related standards and file structures but I've kept clear of any mention of proprietary file structures, ie the sequencer-specific internal formats, used by sequencer manufacturers. It's worth knowing however that the structures of many of these internal formats are far simpler than, say, that of a standard MIDI file – this means that the job of writing a utility to perform some specific editing of an internal sequencer file format is

usually much easier than writing, say, a generalised MIDI file editor.

The reason I'm mentioning this is that, occasionally, sequencing snags can arise in which the easiest solution is to write your own editing software! Direct remapping of drum parts when large numbers of sequences are involved is one case which comes to mind because most drum machines differ in the types of drum sounds they produce and, more importantly, in the note-drum assignments used. If, for example, you send a Yamaha RX21 drum unit a C4 MIDI note it will play a crash cymbal... the same note sent to play percussion on a Roland MT32 unit produces a 'High Bongo'. Although it's useful to have drum units that offer user-definable drum assignments, this doesn't help if, for instance, you want to use a song that someone else has arranged for use with a drum machine that is different to yours.

NO GLOBAL EDITING

To the best of my knowledge, no sequencers on the Amiga allow you to perform automated global edits on batches of sequence files. Writing your own file modification utility

EXAMPLE OF A SIMPLE MIDI NOTE REMAPPING UTILITY

```
/* some defines... */
#define BUFFERSIZE 10000
#define EVENT_TYPE 0x99

/* This program is a hack not a general utility and
in this example we're looking ONLY for notes on
MIDI channel 10; hence, the EVENT_TYPE shown above
is a channel 10 NOTE-ON status byte */

#include <exec/types.h>
#include <exec/memory.h>
#include <libraries/dos.h>

BOOL LoadBuffer(TEXT *, UBYTE *, LONG);
BOOL SaveBuffer(TEXT *, UBYTE *, ULONG);
struct FileHandle *Open(TEXT *, ULONG);

struct Header {
    UWORD SequenceID;
    ULONG EventCount;
    UBYTE SequenceName[8];
};

struct Event {
    UWORD Time;
    UBYTE Type;
    UBYTE Note;
    UBYTE Velocity;
    UBYTE Duration;
};

UBYTE buffer[BUFFERSIZE];
/* Sequence data buffer */

UBYTE note_table[128];
/* Note conversion table */
struct Header *header;
struct Event *event;

main(int argc, char *argv[])
{
    UCOUNT i;

    /* The note_table[] array contains changes that
are to be made to the existing drum assignments.
The i'th element of the array holds the new value
for a note of value 'i'. Notes whose values are to
be left unchanged are simply re-assigned as the
same value. */
}
```

continued on page 80

might seem like a last resort approach, but once you have understood the principles you'll realise that all such programs follow a similar pattern and this means that, once you've written one such utility, other related programs will be straightforward to create. In fact if you stick to creating short utilities which do specific jobs (rather than trying to write all-singing-all-dancing versions which cater for more general editing possibilities) you'll be surprised how easy it is.

EXAMPLE EDIT PROGRAM

This month I want to sketch out the ideas behind a typical edit program and the easiest way to do it is to look at an example: what, for instance, would we have to do to remap the drum assignments of a drum part present in a sequencer file? Firstly, we would have to read the data file. Secondly, it would be necessary to identify all of the notes of the designated drum channel and change these note values to the new values. Lastly the modified file would have to be saved.

The biggest problem is usually getting the file format information in the first place. Given sufficient time, and the right combination of luck and common sense, you can 'hack' your way into the file structure and build up your own 'picture' of how the data is stored. In short the best first step is usually to contact the company concerned, explain what you are trying to do (and why), and see whether it has a policy of releasing details of its internal file layouts.

I've chosen a Dr T's KCS based example because there are a lot of KCS sequencer users who, not having sufficient memory to run the new MPE-orientated level II offering containing the PVG/master editor program, are still using earlier versions of the KCS package. Drum part remapping is not easy so this is one example where a user with some programming experience might find it useful to write his own editing utility.

To provide an example file structure I contacted Dr T's in the States and asked for details of their KCS .SEQ sequence files. Back came the reply with the necessary details: Firstly, an .SEQ file has a 14 byte file-header arrangement...

2 bytes	An ID value
4 bytes	No of events in the file
8 bytes	Sequence name

After the header comes the list of 'events'. Each 'event' is 6 bytes in length and those which are of interest are the ones which turn notes on. The format is as follows...

2 byte	event time
1 byte	event type
1 byte	note-value 7 bits used
1 byte	note-velocity 7 bits used
1 byte	note-duration 10 bits used

The event-time doesn't concern us. Event-type for a 'note-on' event turns out to be a MIDI note-on status byte. The remaining three bytes are a bit more tricky... note and velocity data values only need 7 bits, so the high bits of these bytes are used to store

a couple of extra note-duration bits, ie the duration is actually stored as a 'broken' 10 bit field.

Now we can see what needs to be done to write the remapping utility: firstly we must read the file into memory and look at the header's event count to see how many events need to be dealt with. Having done that we look at each event and, providing it is a 'note-on' event on the right MIDI channel, we convert the existing note value to the required new value. Before converting a note we check bit 7 to see if it is set - if it is we preserve it so that we don't inadvertently change the event's duration.

In the example program I've defined header and event structures based on the .SEQ file details. The use of C structures to mirror the inherent file structure helps to keep the code uncluttered...

For the example I've used a note table which will perform a Yamaha RX21 -> Roland MT32 conversion. The MT32 has a more drums than the RX21 so I had to decide on a suitable MT32 drum sub-set to use - here is the correspondences that I opted for...

Drum/RX21 note/Chosen MT32 converted note

Bass Drum	45	35
Tom 3	48	43
Tom 2	50	45
Snare	52	38
Tom 1	53	48
HandClap	54	39
Closed Hi-hat	57	42

Open Hi-hat	59	46
Crash Cymbal	60	49

In the program on page 79-80 you'll see these MIDI note values set up in a 'note_table[]' array and it's this that you would alter to produce alternative remapping arrangements. The example has been written in C and runs from the CLI/Shell, but the essential ideas of the program would be similar in any language on any computer. To use this offering you'd type three parameters... the program name, the source sequence name, and the destination sequence name. The command...

REMAP DFO:TEST.SEQ
RAM:MODIFIED.SEQ

for example, would read the file TEST.SEQ into memory, make the conversions, then write the modified data as a file called MODIFIED.SEQ into the RAM-disk device.

These types of editing programs are not difficult to write and, coupled with utilities like *Lattice/SAS's* build/extract etc, it is easy to create script files which will use such utilities to edit batches of sequencer data files. The example I provided concerned drum part remapping but the basic ideas can be used to create programs capable of editing any number of event characteristics.

Similar programs can be written to alter standard MIDI files but, because of the more complicated file structures, the programming does get rather more involved. **A5**

continued from page 79

```
for (i=0;i<128;i++){note_table[i]=1;}
```

```
note_table[45]=35; /* BASS DRUM */
note_table[48]=43; /* TOM-3 DRUM */
note_table[50]=45; /* TOM-2 DRUM */
note_table[52]=38; /* SNARE DRUM */
note_table[53]=50; /* TOM-1 DRUM */
note_table[54]=39; /* HAND CLAP */
note_table[57]=42; /* CLOSED HI-HAT */
note_table[59]=46; /* OPEN HI-HAT */
note_table[60]=49; /* CRASH CYMBAL */
if(argc>2)
```

```
{
if(LoadBuffer(argv[1], buffer, _
BUFFERSIZE)==FALSE)
```

```
{
header=(struct Header *)buffer;
event=(struct Event *) (buffer+sizeof _
(struct Header));
```

```
for(i=0;i<header->EventCount;i++)
if (event->Type==EVENT_TYPE)
{
if (event->Type&0x80)
```

```
{
event->Note=note_table[event->Note]&0x80;
}
```

```
else
{
event->Note=note_table[event->Note];
}
event++;
}
```

```
SaveBuffer(argv[2], buffer,
sizeof(struct Header)+header->EventCount*
sizeof(struct Event));
```

```
{
}
}
```

```
BOOL LoadBuffer(TEXT *filename, UBYTE _
*buffer_p, LONG buffersize)
```

```
{
struct FileHandle *fh;
BOOL error_flag=FALSE;
if(! (fh=Open(filename, MODE_OLDFILE))!=NULL)
{
error_flag=TRUE;
}
```

```
else {
if(Read(fh,buffer_p,buffersize)<0)
{
error_flag=TRUE;
}
Close(fh);
return(error_flag);
}
```

```
BOOL SaveBuffer(TEXT *filename, UBYTE _
*buffer_p, ULONG data_size)
{
struct FileHandle *fh;
BOOL error_flag=FALSE;
LONG length;
if(! (fh=Open(filename, MODE_NEWFILE))!=NULL)
```

```
{
error_flag=TRUE;
}
```

```
else {
length=Write(fh,buffer_p,data_size);
if(length<0) {error_flag=TRUE;}
Close(fh);
return(error_flag);
}
```

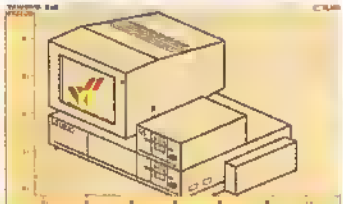

AMIGA FORMAT

ISSUE 38 ■ SEPTEMBER 1992 ■ £3.95

Pop-tastic!
Complete £60 package

The **AMIGA** Collection
FORMAT

No.6 RRP £60
IntroCAD
Progressive Peripherals and Software



FULL COMPUTER AIDED DESIGN PROGRAM!
Intelligent design, you might call it. Create shapes, lines and objects then change and edit them at will to produce complete drawings: it's magic!

● A 500 Plus Compatible ● 1Mb Recommended ●

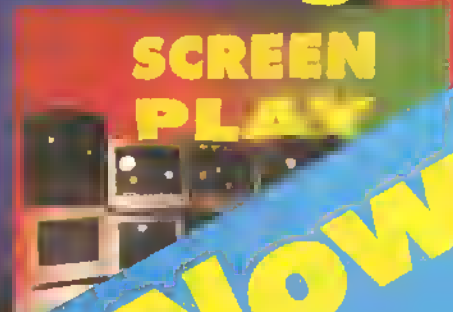


**Give your 500
Super Power!**

Stretch your machine to the limit!
Make it faster, bigger, more powerful
with the best expansions you can buy

Get a new image!

Find out how a
new monitor can
make everything
look brighter,
sharper and
more colourful!



PLUS which!

Out Now
So buy it!

A NEW CLASSIC:
GAMES IN
Pushover
MODERN
DISC

NO COVERDISKS?

WHEN ASK FOR THEM FROM YOUR NEWSAGENT

Down at
the Arcade
AMIGA
FORMAT

3D Construction IKit 2



Try your hand at
creating 3D games
in Demark's
astounding and
fascinating demo

Personal Finance Manager Plus

See how Microdeal's
home accounts package
can help you by trying
this useable demo



The Degraded

Free you from those compatibility worries!

Auto Disk Logger

Keep track of your software activation

ICE adventure game channels

Get more out of your Amiga 2000 - is any!

1Mb and 512K ● A 500 Plus Compatible

DYNAMITE



PRICE CRASH NEW AMIGA 600

£269.95

THE NEW AMIGA FEATURING

- ★ ON SITE MAINTENANCE
- ★ SMART CARD FACILITY
- ★ BUILT IN TV. MODULATOR
- ★ IDE HARD DRIVE CONTROLLER
- ★ DELUXE PAINT III
- ★ MYSTERY GAME

SPECIAL INTRODUCTORY
OFFER

£269.95

A600 HD INC 20Mb HARD
DRIVE

£459.95

(THE HD VERSION DOES NOT INCLUDE DPAINT III
OR A GAME)

★ AMIGA 500 SCREEN GEMS ★

AN AMAZING

£299.99

- AMIGA 1.3 VERSION COMPUTER
 - 512K RAM EXPANSION
 - DELUXE PAINT II, BEAST II
NIGHTBREED, DAYS OF THUNDER
- ALL THIS FROM DYNAMITE
FOR ONLY **£299.99**

★ UNBEATABLE MONITOR DEALS, SAVE £££S

COMMODORE 1084S.....**£204.95**

PHILIPS 8833 MKII.....**£169.95**

GOLDSTAR TV/MONITOR.....**£159.95**

+ These prices are only applicable when a monitor is purchased with any Amiga.
Add £15 if you wish to purchase them separately.

NEW SUPER LOW PRICES! GVP SERIES II HD 8+ 52MB

£334.95

CONFIGURATIONS UP TO 8 MEGABYTES AVAILABLE: (A500)

52MB 0MB RAM	£334.95
52MB 2MB RAM	£369.95
52MB 4MB RAM	£429.95
52MB 8MB RAM	£539.95
120MB 0MB RAM	£439.95
120MB 2MB RAM	£479.95
120MB 4MB RAM	£539.95
120MB 8MB RAM	£649.95

A1500/2000:

Series II HC 8+ 52MB **£264.95**
(Up to 420MB/8MB RAM available!)

A530 Combo:

40MHz + 52Mb HD + 1MB RAM **£659.95**

PC 286 EMULATOR

16MHz Module for Series II **£219.95**

STEREO COLOUR MONITORS

COMMODORE

1084S

£214.95

PHILIPS

8833

MKII

£179.95

FREE F19 Stealth Fighter + 12 month on-site
maintenance

* CABLE TO YOUR COMPUTER ONLY £3.99 WHEN PURCHASED WITH MONITOR

★ DISK DRIVES ★

ALL OUR DRIVES INCLUDE:

TEN x 3.5" DISKS + 3.5" CLEANER KIT
FREE OF CHARGE!!

✦ DIRECT A500 INTERNAL
REPLACEMENT**£39.95**

✦ CUMANA CAX 354 Slimline design**£49.95**

✦ Power PC880E
Featuring Anti-click device**£49.95**

✦ Power PC880B
with Blitz/virus hardware.....**£69.95**

* This offer will run for a limited
period only *

AMIGA CDTV SUPER DEAL

£349.99

Save £250 by trading in your Amiga 500 for a
multimedia pack:

- * AMIGA CDTV * KEYBOARD
- * FLOPPY DISK DRIVE * MOUSE

CALL NOW FOR DETAILS

* OFFER CLOSES END OF SEPTEMBER

AMIGA 1500 PACK

FEATURING:

- ★ LATEST MODEL, INCORPORATING Workbench,
Kickstart 2.0
- ★ GETTING THE MOST OUT OF YOUR AMIGA (book)
- ★ PLUS:- Home Accounts, Platinum Works, Deluxe
Paint III, Puzznic, Elf & Toki

£539.95

This machine is designed for use with a monitor (SEE
OFFER), or a TV modulator can be bought for £19.99

KLONDIKE DEALS

DYNAMITE COMPUTERS
DIG DEEP FOR
THESE SPECIAL
BARGAINS.....

★ AMAZING SOFTWARE CLEARANCE ★

THIS MONTHS SPECIALS: AGONY £12.99, LAZER SQUAD + CHAOS £8.99

* Back To The Future II£3.99	Ninja Rabbits£5.99	Barbarian II£12.99
* Nightbreed£3.99	Battleships£5.99	* Jimmy White£12.99
* Days Of Thunder.....£3.99	Pacmania£5.99	WWF£12.99
* Heroes Of The Lance.....£3.99	Immortal£7.99	Terminator 2£12.99
Shadow Of The Beast II.....£4.99	Bart Simpson£7.99	Cisco Heat.....£12.99
Captain Planet£4.99	Horror Zombies.....£7.99	Outrun Europa£12.99
Lemmings£4.99	* TV Sports Football.....£7.99	4D Boxing£12.99
Bubble Bobble£4.99	Megalomania£9.99	* Wolfpack£12.99
Head Over Heels.....£4.99	Populous + Lands.....£9.99	Chessmaster 2100.....£14.99
Colossus Chess X.....£5.99	* Pro Tennis£12.99	Astra Ten Games.....£17.99

HURRY HURRY - LIMITED STOCKS AVAILABLE
NB * denotes not A500 Plus/A600 Compatible

COMPUTERS

THE PRICE BLASTERS

NEW LOW PRICES

★ ART STUDIO★

Deluxe Paint II	£4.99
Spritz Paint	£4.99
Deluxe Paint III.....	£9.99
Fantavision	£9.99
Photon Paint V2.0.....	£9.99
Deluxe Paint IV	£54.99
Walt Disney Animator	£64.99
Professional Draw V2.	£89.99

NEW LOW PRICES

★ VIDEO STUDIO★

Vidi Amiga + Vidi Chrome..	£49.99
Rombo RGB Splitter	£29.99
Take 2 Animation Package .	£24.99
Complete Colour Solution..	£69.99
Colour Solution + Take 2 .	£89.99
Rocgen Genlock	£84.99

AMAZING DYNAMITE DEAL ROCGEN PLUS GENLOCK

£99.95

Normal RRP £199.99
WHILST STOCK LASTS!

NEW LOW PRICES

★ SOUND STUDIO★

Music X Junior	£9.99
Midi-Master Interface + 2 Midi Cables + Music X Junior.....	£24.99
Music X 1.1	£19.99
Rombo Mega-Mix.....	£24.99
GVP Sound Studio.....	£49.95
Bars and Pipes	£89.95
Bars and Pipes Pro.....	£179.95

HOW TO ORDER

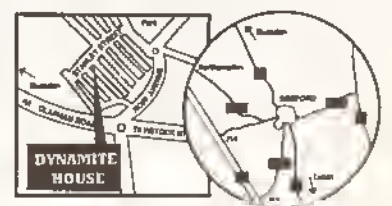


Call us NOW on **0234 214212** **VISA**

Send Cheque or postal order to
DYNAMITE COMPUTERS
Dynamite House
44a Stanley Street
Bedford MK41 7RW

NB Please write cheque guarantee card number on the reverse of cheque to ensure same day clearance (cheques without card number subject to 10 day clearance)

Call into our showroom for a fast and friendly service
Retail/Queries 0234 364428



DELIVERY CHARGES*
£2.95 for orders less than £100
£4.95 for orders over £100
Next day express service £7.50
Saturday delivery only £15.00
*Charges applicable to UK mainland only

PLATINUM SERVICE CARD

Only £19.99!
Features: • Next day courier delivery
• 30 day exchange for new
• 1 year guarantee giving free collection and delivery should a fault occur.
All prices subject to availability and may change without notice. E & OE

★ STAR/CITIZEN★ PRINTERS

CITIZEN 120D+	£109.95
STAR LC20.....	£119.95
CITIZEN SWIFT 9.....	£169.95
STAR LC200.....	£169.95
STAR LC24-20 (NEW)	£179.95
STAR LC24-200 (MONO)	£199.95
CITIZEN 224	£209.95
STAR SJ48 BUBBLEJET.....	£214.95
STAR LC24-200 (COLOUR).....	£249.95
★ CITIZEN SWIFT 24e.....	£264.95

★ Complete with free colour kit whilst stocks last

ACCESSORIES

PARALLEL PRINTER CABLE.....	£3.99
UNIVERSAL PRINTER STAND.....	£3.99
200 SHEETS OF CONTINUOUS PAPER.....	£1.99
COLOUR KIT OPTION FOR SWIFT 9/224/24e	£34.95

★ POWER HAND SCANNER★

FEATURING:
★ LATEST VERSION 2 SOFTWARE
★ 64 GRAYSCALES
★ 100 - 400 DPI
PLUS FREE PHOTON PAINT 2.0 (RRP £89.95)
A DYNAMITE EXCLUSIVE AT £99.95

★ MEMORY ★

512K RAM EXPANSION (1.3).....	£15.95
512K RAM EXPANSION PLUS CLOCK.....	£19.95
1MB RAM EXPANSION (A500 PLUS).....	£29.95
1Mb by 8 SIMM boards (GVP).....	£24.95
A500 RAM BOARDS (fully auto config/full thru' port)	
2Mb	£119.95
4Mb	£179.95
8Mb	£279.95

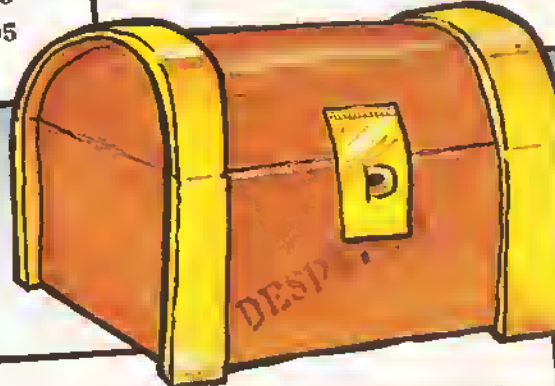
ACCESSORIES/EXTRAS

10 BLANK DISKS (3.5 DS/DD)	£3.99	ZIPSTICK SUPERPRO JOYSTICK	£9.99
50 BLANK DISKS (3.5 DS/DD)	£17.99	QUICKJOY TOP STAR JOYSTICK	£14.99
QUALITY MOUSEPAD.....	£1.99	AMIGA SOFT DUSTCOVER	£3.99
40 CAPACITY LOCKABLE BOX.....	£2.99	AMIGA PERSPEX DUSTCOVER.....	£9.99
80 CAPACITY LOCKABLE BOX.....	£4.49	REPLACEMENT MOUSE	£9.99
ROLL OF 1000 3.5" DISK LABELS	£6.99	REPLACEMENT TV MODULATOR.....	£19.95
MOUSE/JOYSTICK Switcher box unit.....	£9.95	REPLACEMENT POWER SUPPLY.....	£29.95

TO PLACE YOUR ORDER PHONE THE DYNAMITE HOTLINE

0234 214212

DYNAMITE HOUSE, 44a STANLEY STREET, BEDFORD



STOP PRESS • STOP PRESS • STOP PRESS •

PRO WRITE (Wordprocessor)	Only £19.99
MAXIPLAN (Spreadsheet)	Only £19.99
INFOFILE (Database)	Only £19.99

OR ALL THREE FOR A FANTASTIC

£49.99

* N.B. These titles are not Plus/A600 compatible

MJC COMPUTER SUPPLIES

Suppliers of Discount Software since 1984

Educational, Local Authority and government orders welcome. European orders please call or write for a quotation. All goods subject to availability, prices subject to change without notice. E&OE.

Prices include VAT and delivery by post.
Courier delivery available on request.
Please allow 5 days for cheque clearance.

TO ORDER: Credit card orders can be placed by calling the telephone number below - or send a cheque/PO's made out to MJC Supplies to:

MJC SUPPLIES (ASH)
Unit 2 The Arches, Icknield Way,
Letchworth, Herts. SG6 1UJ.
Tel: (0462) 481166 (6 lines)

NAKSHA UPGRADE MOUSE

280 DPI quality replacement mouse - pack includes Mouse House, Mat and Operation Stealth game.

MJC PRICE £21.95

SQUIK REPLACEMENT MOUSE

Great value replacement.
MJC PRICE £12.95

A500 PLUS 1Mb Expansion

1Mb expansion for the A500 Plus - fits in the trapdoor taking your memory to 2Mb - no internal fitting

MJC PRICE £39.95

NEW - ACTION REPLAY III

MJC PRICE £57.95

SUPRA 500RX 2Mb EXPANSION

This memory expansion for the A500+ uses 1Mb x 4 chips and can be expanded up to 8Mb

MJC PRICE £139.95

CUMANA CAX 354 DISK DRIVE

Quality brand name 3.5" second drive includes thru port, disable switch and FREE Virus X Utility

MJC PRICE £52.95

NEW RDCLITE RF382C DISK DRIVE

New super slimline, super quiet second drive.

MJC PRICE £57.95 (cream only)

AMIGA 600 CDMPTER

The latest Amiga computer featuring surface mount technology for greater reliability and the latest Workbench 2 comes complete with Deluxe Paint 3 & Lemmings

PLEASE NOTE: for total peace of mind these computers now come with 12 months on site warranty.

MJC PRICE £339.95

(Price includes free courier delivery)

AMIGA A600-HD

Includes a very neat internal 20Mb hard drive for those needing extra storage space and faster loading.

MJC PRICE £439.95

(Price includes free courier delivery)

PLEASE NOTE: A600 prices correct at time of going to press - Please call - they may be even lower!

AMIGA STARTER PACK

Includes: 10 disks, mouse mat, joystick, dust cover & disk box

MJC PRICE £19.95

OR

JUST £15.95 if purchased with an A600

AMIGA A600 CDNTROL CENTRE

The Control Centres are manufactured by Premier Micros and are made from sheet steel with welded seams and Epoxy coated to match the A600. They are precision made to fit over the back of the A600 to make a perfect platform for a monitor and improve the look of the A600.

They also come complete with a shelf for extra drives and peripherals.

MJC PRICE £34.95

OR

JUST £29.95 if purchased with an A600

NEW - A600 1Mb EXPANSION

Increases the memory of the A600 to 2Mb

MJC PRICE £47.95

AMOS - The Creator

NEW - EASY AMOS - Powerful but easy £22.95

AMOS V1.2 - The original Language....£31.95

AMOS COMPILER.....£19.95

AMOS 3D.....£21.95

AMIGA EDUCATIONAL

FUN SCHOOL

Probably the best selling Educational Software for the Amiga - great sound and graphics and now conforms to the National Curriculum (FS3 & FS4)

Fun School 2 - 8 programs per pack

Fun School 2 under 6£7.95
Fun School 2 6 to 8£7.95
Fun School 2 over 8£7.95

Fun School 3 - 6 programs per pack

Fun School 3 under 5£15.95
Fun School 3 5 to 7£15.95
Fun School 3 over 7£15.95

NEW - Fun School 4 - 6 programs per pack

Fun School 4 under 5£15.95
Fun School 4 5 to 7£15.95
Fun School 4 7 to 11£15.95

All Fun School programs will work with a standard 512k Amiga and the new A500 Plus.

KOSMOS Answerback Junior Quiz

includes 750 general knowledge questions and a game reward£14.95

Answerback Senior Quiz

as above but for age 12+£14.95

Factfiles - add-on question packs for the Answerback Quiz:

Factfile Spelling (6-11)£7.95

Factfile Arithmetic (6-11)£7.95

KOSMOS Language Tutors: with a vocabulary of over 2500 words + the ability to add your own - up to GCSE level:

French Mistress£14.95

German Master£14.95

Spanish Tutor£14.95

Italian Tutor£14.95

KOSMOS Maths Adventure: The latest offering from Kosmos covers the National Curriculum maths using a series of four games. There are four difficulty levels and your performance can be kept and printed out. (6-14)£17.95

NEW - VIDI AMIGA 12

Vidi Amiga 12 is the latest low cost colour digitiser from Rombo. There are no filters and no separate RGB Splitter. Colour images can be captured in less than a second. Mono images are grabbed in real time. Some of the features included are multi-tasking software, capture into a user definable window, composite or S-Video input, 4096 colour HAM mode, 64 colour EHB mode and many more

MJC PRICE £79.00

GVP PRODUCTS

A500 52Mb HD£349.95
A1500/2000 52Mb£279.95
A1500/2000 120Mb£419.95

NOTE! Hard drive prices include VAT and courier delivery.

SIMMs Modules 1Mb (70ns)£25.95
2 X TWO£45.95

MISCELLANEOUS

Pro Midi Interface£19.95
Stereo Master£29.95
Techno Sound Turbo£29.95
Romco Megamix Master£28.95
Rombo Take 2£39.95
Home Accounts 2£36.95
Hisoft Devpac 3£49.95
Hisoft Hi-Speed Pascal£69.95

NEW - MAXIPLAN 4

Latest release of this excellent spreadsheet - up to 3 worksheets open at once, 70 in-built functions, 12 graph styles, database facility, colour or mono printing and much more. Requires 1Mb.

MJC PRICE £34.95

NEW - KINDWDRDS 3

Features include: Ability to open two documents at once, Import Kindwords 2 files, Proximity spell checker and thesaurus, text flow around graphics. Requires 1Mb RAM

MJC PRICE £32.95

Kindword V4.7£39.95
Pan Pal V1.4£54.95
Wordworth V1.1 - UK Version£74.95

LCL SOFTWARE

Primary Maths Course (3-12)£18.95
Micro Maths (GCSE level)£18.95
Micro French (GCSE level)£18.95
Micro English (GCSE level)£18.95
Reading and Writing Course (3+)£18.95

NEW - MEET ADI!

ADI is a friendly alien being that appears on this latest range of educational software from Europress (the manufacturers of the Fun School range). Each package is specifically designed to follow the National Curriculum for a particular school year.

ENGLISH 11/12: Features pronouns, verbs, adverbs, spelling, synonyms and prefixes/suffixes**MJC Price £17.95**

ENGLISH 12/13: Using dictionaries and reference books, construct adverbs, punctuate sentences**MJC Price £17.95**

MATHS 11/12: Covers geometry, algebra, statistics, symmetry, quadrilaterals and number operations**MJC Price £17.95**

Further information on our Educational range is available in our Educational Supplement - on request

VISA

Remember - prices include VAT & delivery!

Access

AMOS ANSWERS

'Doctor' Jason Holborn prescribes a few more cures for your AMOS problems

GAMES PROBLEM

Having typed in the listing in the June Issue of *Amiga Shopper* for the Shoot 'em up game that you are covering within the AMOS column, I find that I cannot get it to either scroll the screen or control the spaceship bob. Sometimes I get a split second image and the program ends or an error is thrown up. What's going on?

Rod McLaren
Peckham, London

Err, yes Rod. You are of course correct in stating that the listings which I've used to demonstrate the games programming feature don't actually run. The reason for this is simple – they aren't meant to. They're really nothing more than 'skeleton' routines which have been written in such a way that they can quickly and easily be incorporated into your own AMOS code. As a result, it's up to you to write the code that pulls them all together. Even then, they'll definitely need to be adapted a little to suit your own requirements.

Ideally I would have liked to have published the listing for an entire game, but it's not really possible. After all, a game doesn't just consist of code – external graphic and sound files need to be pulled in at runtime to make something appear on your Amiga screen. Even if we printed all the code, it would fill up quite a few pages and would be a real drag to type in.

I personally felt that the feature would be of greater value if it required some thought on your part – after all, getting the code up and running is all part of the exercise! JH

YOUR MOVE!

I am currently writing a Chess game using AMOS 3D. I want to display all the chess pieces and the board as 3D objects. I will therefore require a maximum of 33 objects to be displayed on

screen at once. Is this possible with AMOS 3D? If so, how much would it affect the speed of my game if such a large number of objects were to be displayed?

The only solution that I can come up with is to use the Td Redraw command twice without calling Td Cls. This has proved to be impractical as it would halve the speed and I would have to decide which objects to draw and when to give the correct perspective. Can you suggest a better solution?

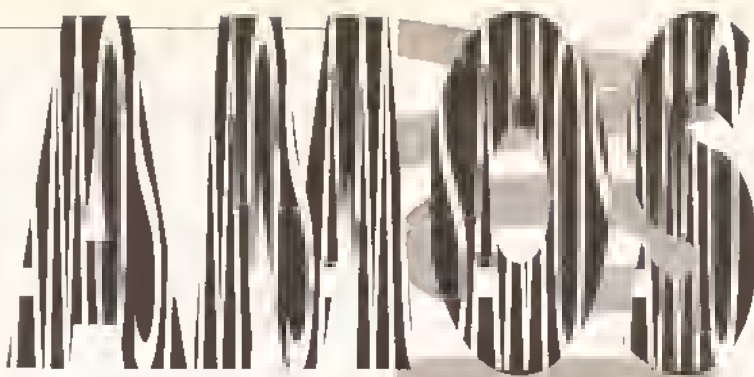
Andrew Swallow
Rossendale, Lancashire

I think you're making life very difficult for yourself by using AMOS 3D for a chess game. For starters, AMOS 3D cannot display more than 20 objects at any one time (object 0 is always your viewpoint), so you're going to have to use a bit of jiggery pokery to get all the pieces to display. The only solution I could think of was to draw each of the pieces as they should appear on a separate screen, grab them out as bobs and then paste them down as you would a conventional bob turning off the 3D object as soon as it has been grabbed. When you need to move a piece, the entire board will need to be redrawn though – not exactly an ideal solution, but at least you keep the perspective.

A much faster (and simpler) solution would be to forget about AMOS 3D altogether and use nothing but blitter objects. When a piece is moved, simply modify the bob priority so that it is displayed in front of all others and when it is placed, decide which bobs should be in front of it and which should be behind it. Although the perspective will suffer, you'll find that even commercial chess games such as *ChessMaster 2000* use this technique. JH

DROPPING SCROLL

When using the Screen Offset command in AMOS for horizontal



Jason Holborn continues his journey into the world of AMOS with a look at the techniques involved in programming 3D games and how to get your screens running in sync...

Welcome to AMOS Action, the liveliest and most authoritative column dedicated to AMOS Basic. Over the next four pages you'll find crafty cheats and clever tricks to help you get the best from what is undoubtedly the most powerful Basic implementation on any computer platform. Although my name sits at the top of this page, this column isn't just the work of a single writer – to bring you the best, we regularly draft in the services of some of the most knowledgeable AMOS experts in the industry.

For experienced programmers, we continue our feature on programming games in AMOS. This month we take a look at how to write a game using AMOS 3D, Voodoo software's excellent 3D extension. If all that techie talk is beyond you though, you'll no doubt find our AMOS for beginners section a real godsend. Designed to unravel the mysteries of AMOS which the manual doesn't quite explain too well, AMOS for beginners is guaranteed to be virtually jargon free.

Continuing the traditions of the *Amiga Answers* section of *Amiga Shopper*, the AMOS column has its own help line in the form of AMOS Answers. If a problem is causing you to tear out all your hair, let us put your mind (and scalp) at rest by answering your problematic prose. As you can see, AMOS Action is the column to read.

OOPS CORNER

I must just take this opportunity to say a big sorry to Sandra Sharkey for virtually writing her obituary in issue 16 of *Amiga Shopper*. As reported, although Sandra has ceased to handle the AMOS PD library, she would like me to point out that she continues to handle her own very successful licenseware scheme. For

more information on this excellent range of disks, Sandra can still be contacted on 0942 495261.

WHAT'S YOURS CALLED?

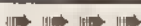
Everyone knows that AMOS is capable of producing a lot more than games and demos. According to the lads at Europress Software, AMOS is being put to the most unusual of uses. If you've developed an application using AMOS which is a little out of the ordinary (an emulator, for example), why not write in and tell me about it. Even better, send me a copy of the program and a screenshot of it may even appear within these very pages.

Send your disks to the usual address marked for my attention. I tend to hoard disks, so if you want to see your disks again... don't forget to include a stamped addressed envelope. If you don't, they may end up spending the rest of their working lives at the bottom of my disk box!

SWAG BAG CORNER

Thanks to a group of light-fingered inhabitants in my home town of Trowbridge, the column you're reading nearly never made it to print. Whilst I was soaking up the sun on holiday (the card's in the post!), some 'upstanding citizens' decided to help themselves to my Amiga system.

Somewhere, someone is having the time of their life playing around with an Amiga A3000, an A1000 (my heart broke when I realised that my treasured A1000 had gone walkies) and the keyboard from my B2000. The most annoying thing is that they walked off with a library of AMOS routines which I had built up over the years. Is nothing sacred?



scrolling of a single screen, the screen drops down 1 pixel at the end of each scroll – how do I avoid this?

Paul Jones
Leeds

Ah, a nice simple question. The reason why your scroll is dropping down a line when it reaches the end of the superbitmap is because you are scrolling past the end of the bitmap.

As you will know, hardware scrolling works by looping an area of screen memory. If you try to loop past the end of the superbitmap, AMOS will display the start of the bitmap again, but it will lose the top line.

To understand why this is happening, you need to understand how screens are held in the Amiga's memory. If you have a superbitmap that is 640 pixels wide and 256 pixels in height, then it would be stored in memory as a continuous stream of 256 groups of 80 bytes (there are 8 bits in a byte, so 80 bytes would give 640 individual bits) starting with the bit at screen position 0,0 and ending with the bit at position 640,256.

In order to scroll a screen horizontally, you need to pass the screen offset command a number which specifies the horizontal offset from the screen origin (pixel 0,0).

When the screen scroll reaches position 640,0, it is reset to 0,0 and the loop begins again. If the offset value is larger than 640, AMOS will start reading the screen image from the second group of 80 pixels (which is basically the second line of the display).

Because the first line of code is effectively being ignored, the display will be only 255 lines high resulting in the 'drop' effect which you have described in your letter. To avoid this, make sure that the offset value is never larger than the maximum size of your bitmap.

JH

HELP!

If you've got a problem with AMOS, then AMOS Answers is here to help you.

Send to any of your problematic prose to: AMOS Answers, Amiga Shopper, Future Publishing Ltd, 30 Monmouth Street, Bath Avon BA1 2BW.

AMOS FOR BEGINNERS

SYNC OR SWIM

We've covered some pretty complex subjects in the past three months. By now you should be able to open a screen in any of the Amiga's screen formats, scroll entire screens smoothly using both hardware and software scrolling techniques. This month we take a look at screen synchronisation, a subject which doesn't produce anything particularly interesting, but is very important nonetheless.

Before we go any further though, let's take a look at the theory behind screen synchronisation. Don't worry about getting bowled over by jargon – it's actually a very simple principle which should help you to understand why it is so important.

As you are probably already aware, the Amiga's display is redrawn every 50th of a second (or every 60th of a second on NTSC Amigas) using an electron beam which scans from the top left hand corner down to the bottom right hand corner of your monitor, drawing each horizontal line of the display as it goes.

BEAM ME UP

When the beam reaches the bottom right hand corner of the display, it is switched off and then reset to the top left hand corner and the process then begins again. The time period during which the beam moves from the bottom right hand corner back to its start position is called the 'vertical blanking period'.

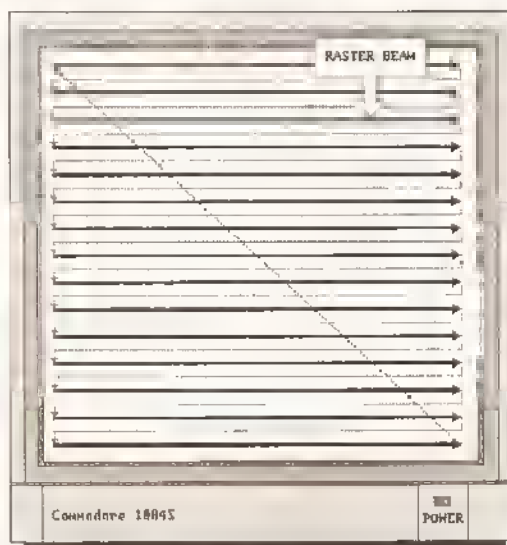
FLICKER FIXER

Even the fastest of computers can't quite handle the task of updating a screen completely during this blanking period, so programmers cheat by using a system called 'Double Buffering'.

Double buffering is actually a very simple process – instead of performing your drawing operations

on the image that is currently being displayed (the physical screen), they are actually performed on a copy of the screen which is invisible to the user (this is called a logical screen).

when the screens are swapped, they are only swapped during the vertical blanking period. If they were to be swapped at any other time, a visible flicker would appear as the Amiga would be attempting to draw half of the physical screen and half of the

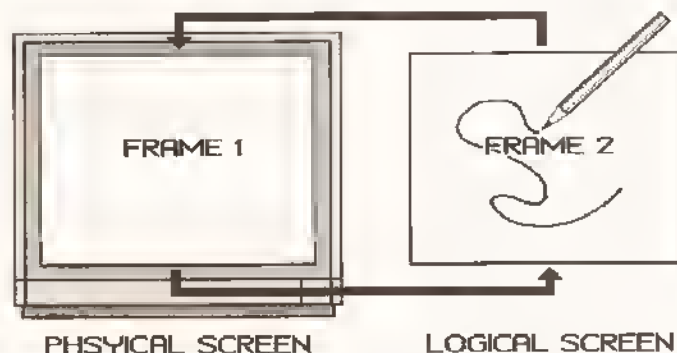


The Amiga's display is drawn on to your monitor using an electron beam which scans from left to right down the screen fifty times a second. When it reaches the end, it is switched off and then reset to the top left hand corner

"Even the fastest of computers can't quite handle the task of updating a screen completely during the blanking period."

logical screen. Thankfully AMOS provides a series of simple commands which enable you to remove flicker almost completely.

The process of setting up a double buffered display can be automated completely by issuing the 'DOUBLE BUFFER' command as soon



Double buffering in action. Whilst frame 1 is being displayed, the next frame is drawn into the invisible logical screen. Once completed, the screens are swapped as soon as the vertical blanking period is reached. This process is performed over and over again ensuring flicker free movement on screen

Once the drawing operations are complete for that particular frame, the physical and logical screens are then swapped. In effect, the old physical screen becomes the new logical screen and vice-versa.

It's very important however that

as the screen is opened.

The process of swapping screens is then automatically handled by AMOS. Sometimes it's not particularly practical to swap the screen every 50th of a second because some drawing operations

(updating a 3D display, for example) take longer to complete. Automatic screen swapping can therefore be turned off with the 'BOB UPDATE OFF' command. It's also necessary to turn off AMOS' AutoBack feature (this basically copies your drawing operations onto both the physical and logical screens) using the 'AUTOBACK OFF' command.

You can then perform all your drawing operations on the logical screen at your own rate and then perform the screen swapping operation manually using the 'SCREEN SWAP' command.

Finally, we need to use the 'Wait VBL' command to tie the screen swap operation in with the vertical blanking period. Once this is done, the whole process can be repeated over and over again producing a flicker free display.

SCREEN SWAPPING

Anyway, that's enough theory – try entering the following listing which demonstrates screen swapping in action.

```
* ** Screen Sync Demo **
* ** Written by Jason **
```

```
Screen Open ↵
0,320,256,32,Lowres
Cls 0
Double Buffer
Bob Update Off
Autoback 0
Ink 2
Do
For COUNT=50 To 322
Ink 0
Box COUNT-2,100 To ↵
COUNT+48,50
Ink 2
```

```
Box COUNT,100 To COUNT+50,50
Screen Swap
Wait Vbl
Next COUNT
Loop
```

The listing above doesn't do anything particularly spectacular, but it serves as a very good demo of synchronising screen redraws using double buffering and screen switching.

If you want to see what the demo would look like without synchronisation, then try removing the line that reads 'Wait VBL'. You'll notice a rather terrible flickering.

One thing to note is the first box drawing operation. You'll notice that it draws a rectangle in the background colour at exactly 2 pixels back from the current value of COUNT despite the fact that the loop counts up in single increments. This is necessary because we're actually dealing with two screens here. As a result, the Box command is used to remove not the last box that was drawn, but the one before it. It's important to remember that the last box which we drew is still being displayed whilst the drawing operations are taking place so we're actually removing the contents of the current logical (hidden) screen.

KEEP TRYING

Don't worry if you're still a little confused. As with all things in life, enlightenment doesn't really come until you've got a bit of experience under your belt.

Try writing a couple of demos yourself which use screen synchronisation. You'll find that all this theory eventually falls nicely into place.

JARGON BUSTING • JARGON BUSTING • JARGON BUSTING

Flicker Fixer – A device which removes the flicker from the Amiga's Interlace mode and the visible scan lines in non-interlace mode.

Interlace mode – This is the Amiga's way of doubling the vertical screen resolution, but normally by effectively halving the screen update rate and thus creating flicker.

NTSC – National Television Standards Committee. This is the name for the TV colour coding system used in the USA and other countries. It has 525 lines, running at 60 fields and 30 frames per second.

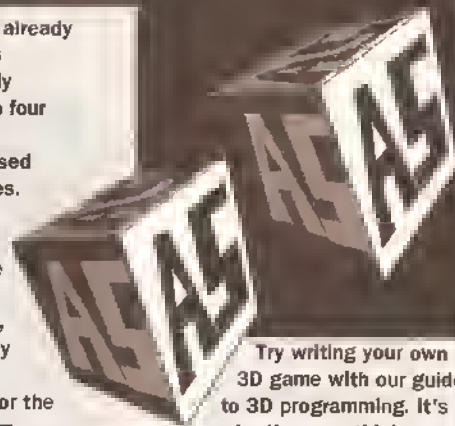
Double buffering – A system used to avoid flicker during animations. Screen information is held in memory, and any changes in memory result in changes to the display. In the case of a double buffered screen, two images are held in memory. Changes are made to one image while the other is being displayed. Once the changes are complete, that screen is displayed and the other is hidden.

Bob – A blitter object or software sprite. A graphics object which is moved around the screen by the part of the Agnus chip known as the blitter.

Loop – A programming concept which enables a programmer to get the same piece of program to execute several times.

GAMES PROGRAMMING 3D Games

As you'll no doubt already be aware, games software basically breaks down into four distinct groups – puzzles, adventure games, sprite-based arcade games and 3D games. With the recent release of AMOS 3D, AMOS programmers can now write games that fall into all four of these categories. Indeed, AMOS now provides possibly the most comprehensive programming environment for the average user on any platform.



Try writing your own 3D game with our guide to 3D programming. It's easier than you think...

DIFFERENT PERSPECTIVE

We've covered the more traditional forms of games software in quite some detail within these pages, so I thought it was about time we turned our attention for a brief moment to the subject of programming in 3D. 3D graphics can be very confusing, but – thanks to the programming prowess of Voodoo Software (the development team behind AMOS 3D) – AMOS 3D makes this task child's play.

If you haven't already bought AMOS 3D, then you just don't realise what you're missing. I was very lucky to have been sent a complimentary copy by those nice people at Europress when the package was first released, so I've had a few months in which to appreciate fully the power of this wondrous add-on. You may well think that 3D is beyond you, but take my word for it, AMOS 3D is an absolute joy to program under.

Obviously it would be impossible to detail how to write a game in 3D with the kind of depth that the subject deserves, so I thought I'd generalise a bit by taking you step by step through the process detailing as many of the more important instructions as space will allow.

DESIGN DECISIONS

The first step in writing any game is to decide upon exactly what you want to write. It's very important at this stage to remember the limitations of both AMOS and the 3D extension when designing your game or you may well end up

running out of processor time and 3D objects before the game has even started to take shape.

AMOS 3D provides you with basically 21 objects to play with, although only 20 can technically be used (object 0 is your viewpoint). Don't forget also that objects within AMOS 3D cannot contain more than eight individual 'primitives' (8 cubes, for example), so don't

"Having all your objects floating in a black void is OK for space games..."

expect to be able to produce massively complex spaceships etc.

Don't try to be too adventurous if this is your first outing with AMOS 3D either – there's nothing more off-putting than having to throw in the towel half way through a game because you're trying to write a game that is beyond your programming talents. Stick with something nice and simple – a 'tailgunner' game is a nice example.

Once the game design is finalised, you can then move across into AMOS 3D's OM Object Modeller and start pulling your 3D objects together. At this stage it's well worth sitting down and designing your 3D objects on paper





before you attempt anything within OM. This will save you a lot of time that would have been wasted just tinkering around with Ideas. Experimentation doesn't hurt of course, it's just that it is all too easy to spend hours just experimenting and not actually produce anything (I do it all the time!).

3D MADE EASY

Once all your objects have been designed and safely saved off to disk, the next step is to quit OM and load up the workhorse of the whole affair, AMOS.

SYNCHRONISATION

As discussed in the beginners section this month, screen

"...you could create an explosion by displaying an animated bab."

synchronisation is very important. Indeed (especially when working with 3D), so the first thing you should do is define a double buffered display. Drawing 3D objects takes time (even with the Amiga's powerful blitter chip doing all the work!), so a double buffered display will remove all flickering that would normally appear if only a single screen was used.

Having all your 3D objects floating in a black void is OK for space games, but even then you may want to add a little bit more depth by dropping in an attractive background. This can be any IFF image but it's best to restrict your backgrounds to only a few colours. The command to

make it all happen is 'Td BACKGROUND'.

Now that the screen display has been correctly configured, the next step is to load in your bank of 3D objects using the 'Td LOAD' command. Note however that this doesn't actually display your objects – all this command does is load all the objects into the appropriate memory bank ready for use. It's no different from loading a sprite file really.

Once the objects have been loaded, they can now be displayed.



Object modelling is used to construct all the objects that will inhabit your 3D universe

Because the 'Td LOAD' command only supplies a pointer to your 3D object bank, it's perfectly possible to use the same 3D object over and over again within the same display simply by giving each on-screen object the same pointer to the 3D

data held in memory. You could, for example, have a whole fleet of spaceships all of which share the same object data. This is quite a handy facility really as it removes the need to define each object separately.

Up to 20 objects can be displayed on-screen at once using the 'Td OBJECT' command. Not only does it turn on the object, but it also tells AMOS 3D where in 3D space the object should be located expressed as a set of 3D co-ordinates (X,Y and Z). To actually view the objects, call the 'Td REDRAW' command and then swap the double buffered screen using the 'SCREEN SWAP' command and they'll appear.

Another very important object that you must define is your viewpoint which is actually an object itself (object 0, to be precise). Your position in 3D space can be set in exactly the same way as detailed above using the 'Td OBJECT' command.

The direction of view can also be set using this command

by setting the VRU (Voodoo rotation units) parameter to a value between 0 and 65536. If you need to calculate this in degrees, simply multiply the angle in degrees by 182.

ON THE MOVE

If you've followed all the instructions above then you should be looking at a very nice 3D display. Problem is though, it isn't actually doing a lot at the moment. Thankfully AMOS 3D supplies a wealth of commands which will enable you to breathe life into your 3D creations. The most commonly used commands that you'll encounter though are 'Td MOVE' (or 'Td MOVE REL') and 'Td ANGLE'. Td MOVE moves the object in 3D space to a given position and Td ANGLE rotates the object around a set of axes based around the centre of the object (expressed once again in VRUs). More flexible than the standard form of 'Td MOVE' though is the 'Td MOVE REL' command that moves an object relative to its current position.

Using the same commands that we detailed in step 6, you can also move around in 3D space yourself. Because object 0 is always your viewpoint, you can move around and rotate your viewpoint using the very

same object movement commands.

Another very powerful command in AMOS 3D's arsenal is the 'Td BEARING' command which can be used to get the co-ordinates of an object relative to another. Say, for example, you were writing an *Elite* clone and you wanted your ship to fire a heat-seeking missile at an enemy vessel. By continuously calling the 'Td BEARING' command and then moving the missile closer and closer to the moving object (simply move it faster than the object that it is chasing), the missile would eventually impact with its target. You could then create an explosion by displaying an animated bab.

BUMPER TIPS

Now that we know how to move objects around in 3D space, we need to be able to detect when they collide (how do we know when the missile above actually hit its target?). Obviously standard sprite-based collision detection routines aren't a lot of good when you're working with 3D (two objects that appear to be touching may actually be a long way from each other), so AMOS 3D supplies a couple of commands to handle collision detection in the third dimension.

The collision detection routines used in AMOS 3D are based around a system of zones (zones are like invisible force fields around an object). To detect collisions between two objects, you therefore need to define a zone for each object using the 'Td SET ZONE' command. The collision can then be detected by calling the 'Td COLLIDE' command. Whilst the system of zones is not perfect, it's good enough for the vast majority of 3D games.

THE NEED FOR SPEED

Finally, we need to be able to keep the frame update speed as fast as possible so it's worth taking advantage of AMOS 3D's ability to remove hidden objects until they are in view. The command that does this is 'Td VISIBLE'. What it does is check whether all the objects that are currently being used are actually within view. If they are not, then it tells the 3D engine not to bother to redraw them. If you've got lots of objects defined, using this command can speed it up considerably. If you don't believe me, try omitting it – I think you'll be amazed at the difference!

Well that's it – you now know everything you need to write a 3D game. You'll find that 3D games are actually simpler to write than conventional sprite-based games. Go on, give them a try. If you manage to produce something spectacular, then don't forget to send it in – I'd love to see what you can come up with! **AS**

JARGON BUSTING • JARGON BUSTING • JARGON BUSTING

Object – An object or sprite is a graphical unit defined in a rectangular frame. It is made up of a number of colours, one of which is defined to be transparent, so that when the object is placed on the screen, the background image may show through underneath. By means of the Amiga's hardware, objects can be moved easily about the screen without disturbing the screen picture beneath them.

Sprite – A graphical shape, moved as a whole around the screen. The Workbench pointer is an example. Some sprites are manipulated by the Amiga's blitter, meaning that they can move very smoothly and rapidly, without erasing any of the information beneath them as they travel across the screen.

IFF – Interchange File Format is a means by which data from different graphics or sound sampling programs are saved in a compatible way. It enables data to be exchanged between programs very easily and avoids the situation, say, on the PC where dozens of different graphics packages each save data in incompatible formats.

BCS AUTUMN OFFERS

**LOOKING FOR DISKS & BOXES
LOOK NO FURTHER**
REMEMBER ALL DISKS SOLD BY BCS ARE FULLY GUARANTEED

DISKS ! DISKS ! DISKS !

100% CERTIFIED ERROR FREE

50 3.5" DS/DD	£22.99
100 3.5" DS/DD	£37.99
150 3.5" DS/DD	£52.99
200 3.5" DS/DD	£69.99
400 3.5" DS/DD	£158.99
500 3.5" DS/DD	£165.99

1000 + Call for spot price

All prices include VAT/free labels
& free delivery

GVP SERIES II HARD DRIVES & ACCELERATORS

GVP 52Mb HD 8 II	£339
GVP 120Mb HD 8 II	£434
GVP 240Mb HD 8 II	£675
GVP A530 Combo 40MHz + 50Mb	£645
GVP A530 Combo 40MHz + 120Mb	£750
GVP A530 Combo 40MHz + 240Mb	£979

Phone for prices on A1500 GVP products

DISKS + 100 CAP LOCKABLE BOXES 100% CERTIFIED ERROR FREE

50 3.5" OS/DD + 100 cap box	£25.99
100 3.5" OS/DD + 100 cap box	£40.99
150 3.5" OS/DD + 100 cap box	£56.99
200 3.5" OS/DD + 2 100 cap boxes	£74.99
400 3.5" OS/DD + 4 100 cap boxes	£147.99
500 3.5" OS/DD + 5 100 cap boxes	£174.99
1000 3.5" OS/DD + 10 100 cap boxes	£ call

All prices include VAT / free labels & free delivery

3.5" DELUXE LOCKABLE BOXES

40 Capacity	£4.10
100 Capacity	£4.50

3.5"/5.25" 10 CAPACITY BOX £1.00

NEW A600 £279

NEW A600 PLUS 20Mb HD £454

DISKS + BANX STORAGE BOXES

100% CERTIFIED ERROR FREE

50 3.5" DS/DD + 80 Cap Banx Box	£31.99
100 3.5" DS/DD + 80 Cap Banx Box	£45.99
150 3.5" DS/DD + 2 x 80 Cap Banx Boxes	£68.99
200 3.5" DS/DD + 2 x 80 Cap Banx Boxes	£85.99
500 3.5" DS/DD + 5 x 80 Cap Banx Boxes	£199.99

All prices include VAT / free labels & free delivery

HIGH DENSITY 3.5" DISK 60P EACH

(OR 100 3.5" DS/HD FOR £61 INCL. P & P /
LABELS/VAT)

5.25" DS/DD Disks21p each

5.25" DS/HD Disks39p each

10 TDK BRANDED DISKS DD £6.50 HD £10.50

ACCESSORIES

1/2 Meg Upgrade	£27.00
1/2 Meg Upgrade + Clock	£29.00
1000 Labels (coloured)	£8.00
1000 Tractor Labels (white)	£10.00
Naksha Mouse	£19.50
Mouse Mat	£19.50
Mouse Holder	£2.50
1MB Upgrade (A500P)	£45.00
Amiga Ext Cumana Drive	£58.00

JOYSTICKS

Zipstick	£11.50
Stingray Joystick	£13.50
Cheetah 125+	£7.50
Cheetah Star Probe	£10.00
JetFighter	£12.50
Topstar	£21.00
Black Cruiser	£10.00

PHILIPS CM8833 MkII PACK

Philips CM8833 Mk II Colour Monitor UK Spec, lead, Lotus Turbo
Challenge + 1 year on-site warranty + dust cover

ONLY £199

3.5" STACKABLE BOXES

60 Capacity Lockable	£10.00
80 Capacity Banx Lockable Box	£9.95
150 Capacity Posso Box	£15.00
5.25" 70 Cap Posso Box	£16.50

5.25" 50 Cap Lockable	£5.10
5.25" 100 Cap Lockable	£5.90

CITIZEN PRINTER OFFERS

Citizen 120D + 9 pin mono 120/25cps, 2 year warranty + lead + dust cover	£129.00
Citizen Swift 9 pin colour 160/40cps, 2 year warranty + lead + dust cover	£189.00
Citizen 24 pin 224 colour 160/53cps, 2 year warranty + lead + dust cover	£224.00
Citizen Swift 24E colour 180/60cps, 2 year warranty + lead + dust cover	£285.00

NEW A600 PACK

New A600, Deluxe Paint III, Mystery
game, Superbase Personal, Spritz,
10 3.5 DS/DD Disks, Disk Box, Mouse
Mat, Microswitch Joystick, Tailored
Dust Cover.

**BCS PRICE
£285**

NEW A600 20Mb HD PACK

New A600 20Mb HD, Superbase
Personal, Deluxe Paint II, 10 3.5
DS/DD Disks, Disk Box, Mouse Mat,
Microswitch Joystick,
Tailored Dust Cover

**BCS PRICE
£469**

DUST COVERS

A500 Dust Cover	£3.00	Philips CM8833 MkII Cover	£3.50
A600 Dust Cover	£3.00	Citizen Swift 9 Cover	£3.50
Star LC200 Dust Cover	£3.50	Citizen Swift 24 Cover	£3.50
Star LC24 200 Dust Cover	£3.50		

STAR PRINTER OFFERS

Star LC-200	£199.00	Star XB24-200 colour	£395.00
Star LC-24 200	£259.00	Star XB24-250 colour	£495.00
Star SJ48 Inkjet printer	£235.00		

Prices incl. VAT/lead

All prices include VAT. Add £4 P&P / add £8 2 day / £10 next day
Call in or send cheques / postal orders to:

BCS Ltd., 349 Ditchling Road, Brighton, East Sussex BN1 6JJ

ORDER HOTLINE:

Tel 0273 506269 or 0831 279084

VISA

Access

All offers subject to availability. Prices may change without notice.

World of Commodore and the Amiga Shopper Show.

...er exper
... has the answer.
Bring along your Amiga
queries and have them
answered at the show!

There will be acres of stands displaying the fastest, slickest, smartest Amiga hardware and software. Just some of the stands already booked are: **Electronic Arts**, Great Valley Products, **Citizen**, Commodore, **16/32 PDL**, Ashcom, **Care Electronics**, Connect International, **Cortex Design & Technology Ltd**, Datel Electronics, **Power Computing Ltd**, Progressive Peripherals, **Dial A Disk**, Digita International, **Digital Disks**, DisKing, **Dynamite Computers**, FAB Computers, **Supra (Deutschland) GmbH**, Future World Computers, **George Thompson Services**, Gremlin Graphics, **Just Amiga Monthly**, Kador, **Kontax Engineering Ltd.**, Mail Order Express, **Meridian Distribution Ltd**, MD Office Supplies, **New Dimensions**, Ocean Media Ltd, **Pandaal Marketing**, PD Soft, **Phoenix**, RGB Studios, **Rombo Productions**, Silica Shop, **Silica Systems**, Snap Computer Supplies Ltd, **T.I.B.**, Trojan Products, **Videk Ltd**, Waxride Ltd, **We Serve**, WTS Ltd... the list goes on and on...

Save time and money

Get smart. Getting on for 100,000 people are expected to attend the Future Entertainment Show. And you know what that means: **queues.**

So avoid all the foot-shuffling, hanging-around-for-ages start to the Show by booking your tickets early.

And you'll even **save money!** You can't lose really, so do it now!

YES I would like to have my tickets early, avoid all the queues and save £1.05 on every ticket, please. Adults £5.95, under 14s £3.95.

Call the credit card hotline on

051-356 5085

or fill out the coupon on the right!

- Try the latest kit!
- Meet the experts!
- Save a fortune!

Show facts

**When? November 5-8, 9.30am-5pm
(4pm Sunday)**

Where? Earls Court, heart of London

**What? Amiga software and hardware
plus Sega, Nintendo, PC, ST...**

**How much? £7 adults, £5 under 14s
(but see 'Save time and money')**

**Who? Everyone who's anyone
including the entire
Amiga Shopper team**

Tickets

AS/10

I would like to order advance tickets for the Future Entertainment Show and save £1.05 per ticket.

Please send me ____ adult tickets at £5.95 each

Please send me ____ under-14 tickets at £3.95

Total Payment £ _____

Method of payment _____ ☐ Visa
Please make all cheques _____ ☐ Access
payable to: _____ ☐ Cheque
FUTURE ENTERTAINMENT SHOW ☐ PO

Card number _____

Expiry Date _____

Signed _____

Name _____

Address _____

Post code _____

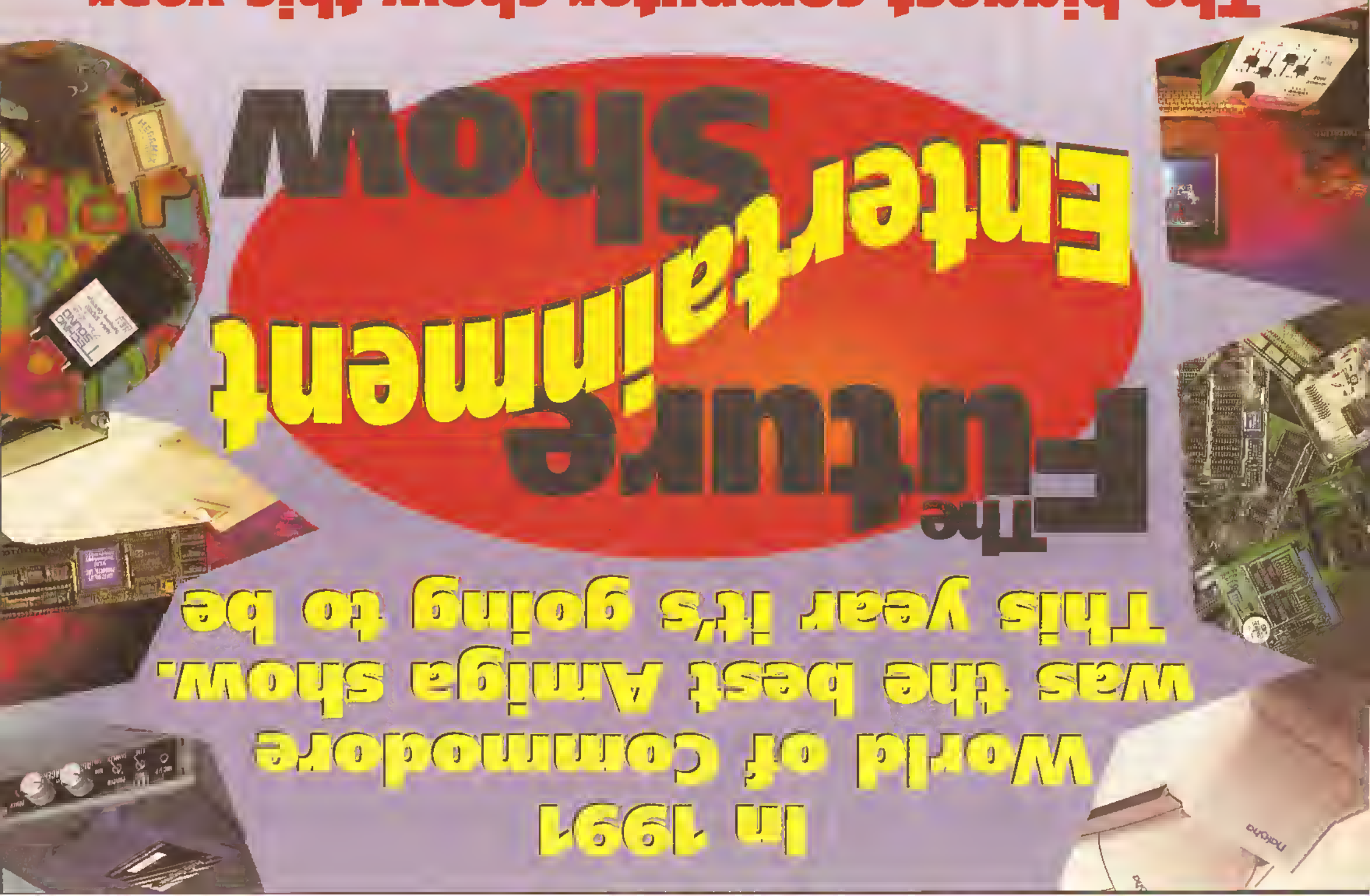
Send this form to: FUTURE ENTERTAINMENT SHOW
PO Box 2, Ellesmere Port, South Wirral, L65 3EA

If you've got an Amiga you have to be there!

The biggest computer show this year
brought to you by the makers of

The Future Entertainment Show

In 1991
World of Commodore
was the best Amiga show.
This year it's going to be



ROBOTICS

Did you know your AMIGA can control a robot arm or mobile robot? It can also control heating, lighting and intruder alarms in your home. In fact, any electrical or electronic device can be hooked up to the AMIGA using the SWITCHSOFT input/output port.

Don't get left behind! Computer control is a vast new exciting field to explore. Bring your AMIGA into the real world. Phone or write for free information pack.

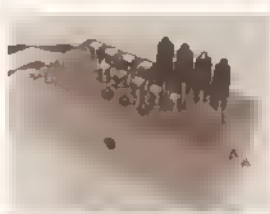
AMIGA INPUT/OUTPUT

£27.95

Now you can use your Amiga to switch electric motors, respond to sensors and control robotic devices. • 11 Outputs for motors etc. Up to 13 inputs for sensors + 2 analog inputs.

Easy to program in AMIGA BASIC, AMOS, GFA & HISOFT. 21 page User Manual.

"A well constructed & fiercely priced piece of kit" Amiga Shopper



AMAZING SENSOR & CONTROL EXPERIMENTERS KIT

£27.95

£1 OFF if purchased with I/O Port.

6 plug-in Projects. No soldering required. Includes relay module, motor, tilt sensor, reed switch, light bulb, 4 LEDs, powerful software on disk and FREE "Guide to Amiga Interfacing".

JUST RELEASED... DUAL MOTOR CONTROLLER MODULE £17.95

Any 2 small motors: Forward/Reverse/speed control. Plugs into 4 I/O Port channels. Ideal for BUGGY KIT (£19.95)

TEMPERATURE & LIGHT EXPERIMENTERS KIT

£11.95

Thermo & Photo sensors plug into analog inputs + superb "Amitrol" software.

MAINS CONTROLLER MODULE

£24.95

(Standard mains socket). Handles 15 amps.

UNCONDITIONAL GUARANTEE. If not completely satisfied, you may return any product within 10 days for a full refund.

Please send cheque payable to SWITCHSOFT or ring Switchsoft on 0325 464423. Prices include P&P. Overseas add £4.



SWITCHSOFT Dept AS1092
26 Ridgeway, Darlington,
Co. Durham DL3 0SF



The ROC LOBSTER BBS

Lots of files to download.. Ranging from MUSIC, DEMOS, GAMES.

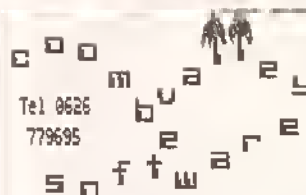
Or just have a chat with other Amiga fans. Call now.

FREE LIFE MEMBERSHIP

OPEN 24 HOURS A DAY 7 DAYS A WEEK

0462-677524

MODEM SPEEDS.. 300-2400 BAUD 8N1



Educational Programs

Written by experienced teachers.

88% in ST Format June 91
Trade enquiries welcome

Tel: 0626 779695

Day or evening

Do you want to see your children use the computer for something other than shoot-em-ups?

Would you like them to use more than four keys and a joystick?

Do they get fed up with being killed off while trying to work out which button does what?



Coombe Valley Software may have what you are looking for

Send SAE for information or disk/50p for demos, state computer

To C.V.S. 18 Nelson Close, Teignmouth, Devon TQ14 9NH

WE ARE OPEN ALL HOURS

9am-10pm Mon-Sat
10am-6pm Sun

HARDWARE

A600.....	£379.00
A500 Plus & Software.....	£349.00
A1500 & Software.....	£565.00
1084S Monitor.....	£237.00

Home for 2000 in 3000 program.

ACCESSORIES

Amiga int drive	£49.00
Cumana Ext drive	£54.00
Zydec Ext drive	£49.00
512K upgrade with clock	£27.90
512K upgrade no clock	£24.90
1.5 Meg upgrade with clock	£79.00
1 Meg Amiga plus upgrade	£48.99

PRINTERS

Star LC-20	£149.00
Star LC 24-10	£214.00
Star LC200 Colour	£204.00
Star LC-24-200 Colour	£294.00

JOYSTICKS

Quickshot II.....	£6.50
Python Micro Switched	£8.00
Speeding Autofire.....	£10.50
Competition Pro 5000 Black	£11.90
Maverick Autofire.....	£12.95
Zipstick Autofire.....	£12.95
Intruder.....	£21.50
Violator Flight Stick	£25.50
Quickjoy Jetfighter.....	£13.90

DISKS with labels

Unbranded Bulk 100% Certified

3.5" DSDD	37p each
3.5" Rainbow	44p each
3.5" DSDD	50p each
5.25" DSDD	88p each

Branded Disks

3.5" DSDD	13p each
-----------------	----------

Please phone for bulk purchase discounts

STORAGE BOXES

10 capacity	£0.95
NEW 200 Cap box stackable/lockable	£16.50
50 capacity lockable.....	£3.95
100 capacity lockable.....	£4.50
80 cap Banx stackable/lockable	£7.99
150 cap Posso stackable/lockable.....	£15.00
250 cap stackable/lockable	£18.99

Most of the above available in 3.5" and 5.25"

LOOK! LOOK! LOOK!

TRACTOR FEED DISK LABELS

500 plain white labels & software to print your own professional labels

Only £9.95

SPECIAL OFFER

1000 labels with software £13.50

MISCELLANEOUS

Mousehouse	£1.60
Mouse Mat	£2.50
Disk Drive Cleaner	£1.80
Amiga Dust Cover	£3.50
Monitor Dust Cover	£3.50
Mouse/Joystick Auto Shift	£14.95
Amiga Light Pen & Software	£32.00
Optical Mouse.....	£32.00
Squik Mouse	£14.90
Naksha Mouse & Accessories.....	£22.00
Zy-Fi Amplifier & Speakers	£37.95
Thumb & Finger Trackerball	£19.99
Crystal Trackerball	£32.00
Action Replay Mark III	£57.00
Techno Sound Turbo Sampler.....	£33.00
2 Piece Printer Stand	£5.70
Midi Master	£26.00
Wordworth 1.1	£77.50

Orders by phone or post to:
DIRECT COMPUTER SUPPLIES

0782 - 642497 9am - 5.30pm week
0630 - 653193 Anytime
0782 - 311471 Evening/Weekend

54 Spring Road,
Longton,
Stoke-on-Trent,
Staffs ST3 2PX

Prices include VAT
Postage please add £3.30
We accept cheques/
P.O.'s/Visa/Access

This month we'll be taking a look at a shareware BBS system, 4D-BBS which for a mere \$29.95 gets you a very powerful BBS system indeed.

First of all though, a look at a new NComm log file analyser, *LogInfo*, that I received recently. At first sight it seemed to offer little new, a closer look however produced some interesting surprises.

LOGINFO

LogInfo is written by one Sanjeev Massey from London. It's shareware, with a very reasonable registration fee of £10. The demo version is limited to 75 calls. While this wouldn't earn it much of a reputation among PC owners, I'm much more forgiving, and 75 calls is plenty to assess its value.

FIRST IMPRESSIONS

The first things you'll notice about *LogInfo* are the icons. They were designed for a Workbench 2.0 system which means they look horrible on a 1.3 machine, but progress cannot be avoided so, if like me you've only got 1.3, you'll have to put up with grotty icons until you upgrade.

The program comes with two document files. The first details the operation of the program in great depth including an explanation of how British billing is calculated, full details BT's unit scheme and details on how to modify the programs so that they can be used with other (foreign) types of billing in particular minute based billing (this option is ideal for people who use Mercury).

The software has an icon (a take off of the BT logo) and double clicking on it presents the first problem. A requester appears informing you that the reqtools.library is missing. Closing the requester crashes the machine requiring a reset.

It's at this point that you remember that you were supposed to install the library in your LIBS: directory. A script is provided though, so once you've done that everything runs hunky dory.

LOGINFO IN ACTION

When you run the program you get the usual reminder requester giving Sanjeev Massey's address and reminding you the program only costs a tenner.

Clearing the reminder gives you an almost blank screen with a set of gadgets at the top which provide access to the analysis routines and a collection of pull down menus giving access to the options available.

CHARGE BANDS

LogInfo provides you with up to 25 "Charge Zones", with each one having up to five time bands within each zone. This enables you to set up the various BT charge bands (local, a, b1 etc.) plus any international areas you may use.

LogInfo also enables you to set up a number of Bank Holidays when all day will be charged at cheap rate.

Once you've set up your charge bands (and *LogInfo* comes complete with our National ones already set up) you need to load a log file and set the charge bands for the boards contained in it.

ZONE ANALYSIS

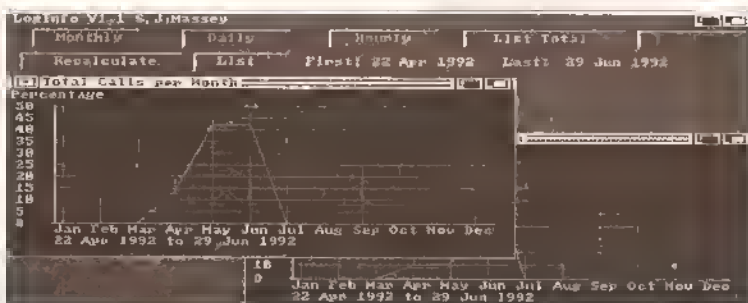
Once you've set up the board zones you can proceed to analyse the data.

There are five ways of analysing the data, on a monthly, daily or hourly basis, an overall summary of the log file and a list of the boards you call in time, cost or alphabetical order.

WORDS OR PICTURES

Each of the reports can either be text or graphics based, alternatively you can write the report to a file and therefore the printer.

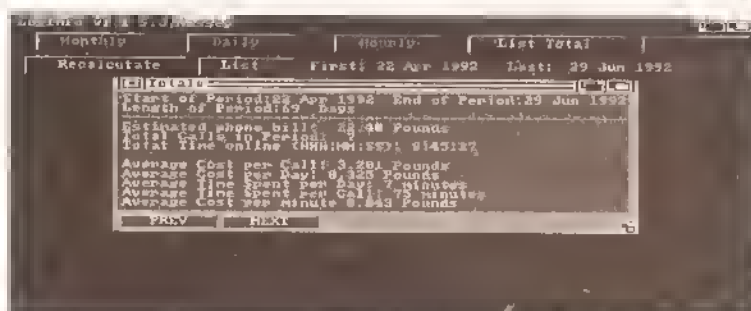
If you choose to display a graph, you can show either time online,



LogInfo uses the windowing environment to the full, enabling several graphs to be viewed simultaneously

Biting the bulletin

This month Phil Harris enters the fourth dimension in search of a BBS system and examines the new NComm log file analyser



LogInfo also provides a general summary of all the calls in the logfile, and an estimate of the cost so you can warn your wife

number of calls or cost over the selected time period. One of the nice things about *LogInfo* is that it has been written as a windowed program. This means you can have a window showing the cost per day graph next to a window showing the time online day graph. You can also view graphed reports and text based ones at the same time, to get a better view of the actual figures involved.

CONCLUSION

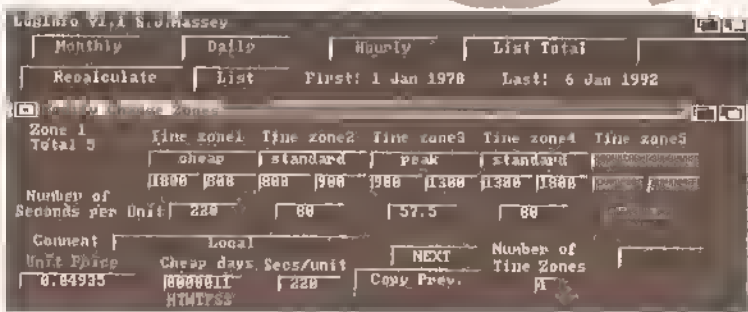
Put simply, *LogInfo* is one of the best UK shareware programs I've seen in a long time. The presentation is excellent and more importantly, a lot of thought has gone into making the program easy to use. At 10 quid it's a bargain and is ideal for stateholics, as well as people who are keen to keep an eye on their phone bill.

LogInfo should be available on a BBS near you, or alternatively write

to S J Massey, 48 Selsdon Road, Upton Park, London E13 9BX.

4D-BBS

The 4D-BBS I've been looking at is actually the 4D-BBS DEMO. The difference between the demo version and the full shareware item is minimal.



Multiple charge zones are a piece of cake, once you've mastered the requester from hell!

Firstly a couple of items are missing (the voting booth door for example) and secondly there will be no new features added to the demo. Only the full registered version will be improved on. Bug fixes will appear for the demo though, although so far I haven't found any bugs which need fixing.

facilities are there, messages, files, E-Mail and full ANSI support.

Beyond those are a couple of interesting and less common options, a user listing (listing all the users on the system which match a search string), a built in BBS list (a common feature of most boards, but usually as an add on) and something

not necessarily useful for everyone but for a sysop it's a godsend!

MACRO FACILITIES

The other feature in 4D that appealed to me is the macro facility. This allows a set of keypresses to be assigned to one of three macros, just like in word processors. The power of this feature is that it is the USER that sets up the macros, for her own use.

It's this sort of thought that helps raise certain shareware products above the commercial competition.

Once you've taken a look round the demo board it's time to sort out how to make your own. A quick read through the documentation (which is, thankfully, relatively short) reveals that there is no easy to use, intuitive setup program, it's text file time.

TEXT FILE AGONY

There seems to be a trend in Amiga programs to skimp on the setup for a program, no matter how complex. Soft-Span BBS (see last issue) used text files to configure it, *Transmiga*

Figure 2 gives a list of the various options which are available.

The majority of the commands also feature sub commands that modify the behavior. For instance, command D has two subcodes, using the subcode A will prompt the user to enter a new BBS, while subcode S will show the whole list. The text file also allows you to set the access level for a particular option, to prevent new users accessing somewhere they should or to allow sysop only menus.

GLOBAL OPTIONS

A couple of other menus give you the facility to have a standard set of commands available from everywhere and also a special menu that people you have banned from the system are placed in when they log on. Both of these are optional.

Both message and file bases are set up almost identically. A text file is created listing the maximum number of sub areas, the area names and in the case of message bases, the maximum number of messages in that area. Messages are stored in separate directories in a one file per message format. This causes a pretty high overhead which could do with changing.

CONCLUSION

4D-BBS is an excellent system, even the demo version (which incidentally, can be used for as long as you wish). The full version promises to be even better.

My only major criticism of it is the lack of intuitive set up program, something a lot of Amiga programs could do with. A reference sheet is provided though so once you get the hang of setting up the text files you'll be able to breeze through even the most complex system, and you do only have to do it once.

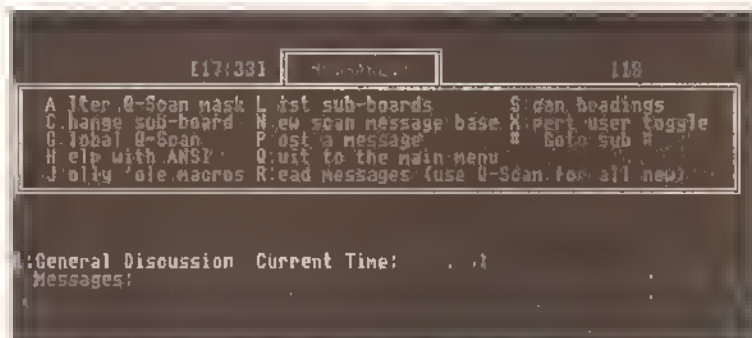
And, it does only run in NTSC a bit of a let down but not too drastic. Overall 4D-BBS is an excellent BBS for \$29.95 and it's even better value if you stick with just the "demo".

UNTIL NEXT TIME

Thanks go to Chiba City BBS (0501 44262) this month, for supplying the excellent 4D BBS. Give Chiba a call, it's well worth a look, if only because it runs on an Amiga (something that is becoming rarer by the day).

Next month I'll be comparing some of the most popular Amiga boards, seeing what makes them special and trying to discover why they are a success. Till then, happy comms.

Philip Harris can be contacted on CIX (081 390 1255) as piharris or on the End Zone BBS (0524 752245) as PHILIP HARRIS.



One of the many user screens provided by 4D-BBS. It's not at all unattractive by bulletin board standards, with messages in yucky magenta and green

STARTING OUT

The first thing that struck me about the BBS was the ease with which you could start playing. A script is provided to install all the appropriate parts, and another to run the system. This second script did have to be modified slightly to run on my hard drive system but once that was done the system started first time.

The first thing to do is to take a look round the demo BBS and see what the system is capable of. I would recommend doing this *before* you actually read the instructions. The reason for this unusual advice is that one look at the demo BBS and you'll be hooked. Then, when you see how awkward it is to configure the system you'll be too enthusiastic to give up.

The demo BBS gives you an insight into the power of the system. The main menu contains no less than twenty options. All the usual

that really took my fancy, "Multi-mail".

MAILING LISTS

Multi-Mail is (as far as I know)



Here is a screen in 4D-BBS which serves both as an advert and a prompt to ensure you get around to registering your copy

unique to 4D, but not for long I'm sure. When you enter a Multi-Mail message you specify up to 10 users and the mail message is sent to all of them. It's an obvious idea, and

BBS (mentioned briefly last month) uses a very basic program to modify it's setup, even the classic directory utility, *S/D*, still uses a text file. All of these programs really need a mouse driven configuration system. New users do not want to be wading around in the CLI to set up their new software.

Unfortunately 4D is even worse in this respect. Figure 1 shows an example configuration file for the main menu (in this case from the demo BBS).

The first line tells the system which text file it should display when this menu is reached. This name will have .ansi or .ascii appended to it depending on whether the user has ANSI colour turned on or not. It's up to you what goes in this file, it's usually a pretty picture. The second line of the file gives the prompt that is to be used with this menu.

The rest of the file lists the keys available, and the actions assigned to them. The action is given a one character code, with any options required given afterwards.

Figure 1: 4D-BBS configuration file - the main menu

```
m:1 % base.menu
d:1 $ file.menu
y:3
u:5 a None
w:5 a 0
l:6
e:7
j:q
f:1 % feed.menu
r:m r 0
s:m a 0
l:m m 0
v:e Sorry, but the voting booth door is not available yet.
g:j 0 0
a:d a
b:d s
```

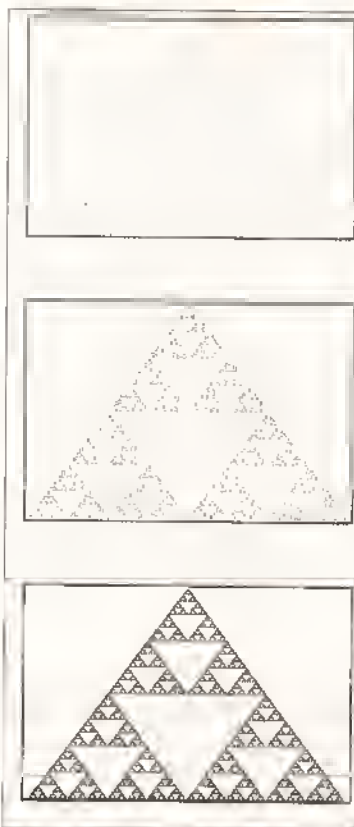
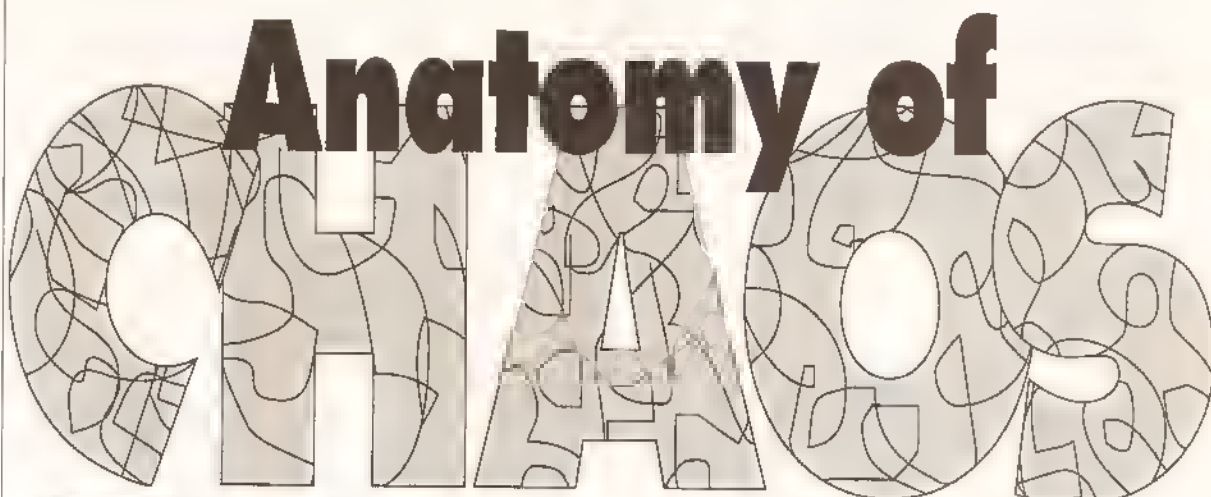

The new science of chaos, with its fascinating images and strange concepts, seems to have captured people's imagination like no other science. After getting a taste of chaos through the media, many people are eager to know more, but the terminology and ideas involved can seem difficult to comprehend and the definitions found in textbooks are generally dry and highly mathematical, deterring even the most inquisitive reader. In this series we dispense with the complicated maths and jargon, and explore chaos in a more practical way, using the Amiga.

ORIGINS OF CHAOS

During World War Two, military strategists and politicians realised that the accuracy of the weather forecasts on which they relied could be greatly improved. Following the war a lot of money and manpower was invested in meteorology, the science of weather and climate. In an effort to improve these forecasts, it was hoped that with the new technology, and with large research funds, accurate long-term weather forecasting would be possible. As we all know, this was never realised. At the time people were surprised at the scientists' apparent failure, and could not understand why the scientists with their expensive equipment were no better at forecasting than the local soothsayer.

Realising that they were getting nowhere at great expense, scientists working on meteorology began research, using simple computer-based mathematical models, to determine why weather prediction was so difficult. Simultaneously, other researchers were investigating other unpredictable elements of nature, such as population dynamics. Connections began to appear between the different kinds of unpredictability, common characteristics could be seen to be exhibited in erratic processes taking place in many subject areas, from economics to chemistry. Processes displaying these characteristics became known as chaotic processes due to their pseudo-random nature. The study of their similarities became the new science of chaos.

The catalyst for chaos research has undoubtedly been the computer, the multitude of calculations that must be performed in even the simplest of chaotic processes make manual calculation practically impossible. In the beginning it was only well-funded universities and military establishments that could afford the equipment to carry out such experiments, but since the home computer boom of the eighties cheap computers like the Amiga



Place points randomly on the screen and, after a few seconds, the Sierpinski gasket appears

have brought chaos within the grasp of many other people. The Amiga's speed and excellent graphics capabilities make it ideal for chaos work. In many respects, the Amiga is better than the computer which, in 1980, Mandelbrot used to produce the famous Mandelbrot set.

WHAT ARE FRACTALS?

Closely associated with chaos theory are fractals, the elaborate patterns which can now be found on T-shirts, record covers and, of course, in computer magazines. Fractals are so intricate that they can't be treated like normal geometrical shapes such as circles and polygons, and have surprisingly little ordered structure, despite the fact that they originate from simple rules. It is difficult to

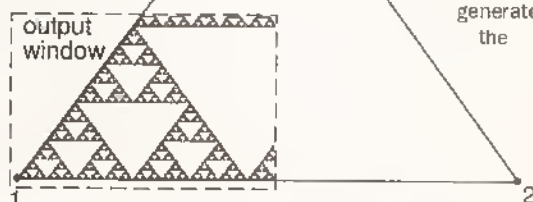
So you've heard of chaos theory and dabbled with fractals. But what exactly is chaos, what use is it, and just what's so special about fractals anyway? Conrad Bessant provides the answers in the first part of our 'hands-on' chaos tutorial

accurately define fractals without reference to some complicated mathematical concepts, the best way to understand fractals is to experiment with them, as we'll be doing throughout this series.

ORDER FROM CHAOS

Usually it is safe to say that a random process produces random results, and an ordered process produces ordered results. For example, randomly falling rain produces an even spread of raindrops with no structured pattern, but a set of explicit commands or equations (a deterministic process) gives a predictable, ordered, result.

There are, however, some processes which do not abide by this rule of thumb – the Sierpinski gasket is the result of one such process. Unbelievably, the process used to generate the



The easiest way to zoom into a section of the gasket is to enlarge it so that only the relevant section falls within the output window

CARTESIAN CO-ORDINATES

If you have done any graphics programming before you will have come across a co-ordinate system, although you may not have noticed its formalities at the time. When you have a plane surface, like the Amiga's screen, you must have some system with which you can describe the position of any point on it. This is called a co-ordinate system.

The easiest way to describe the position of a point is by using a Cartesian co-ordinate system. A variation of this is used in Amiga BASIC's graphics functions. For example, when plotting a point using the PSET command the position of the point must be specified by stating its co-ordinates, ie how far across it is (the x position) and how far down it is (the y position). Such co-ordinates are usually written in the form (x position, y position), so a point 200 pixels across and 100 pixels down is denoted by the position (200,100). This notation is useful when describing fractal generation algorithms and will be used frequently during this series.

LISTING 1 • LISTING 1 • LISTING 1

```
REM Dimension arrays to hold the positions of the corners
DIM x(2)
DIM y(2)
```

```
REM Set positions of the three corners
x(0)=320
y(0)=10
x(1)=50
y(1)=190
x(2)=590
y(2)=190
```

```
REM Pick a corner at random
corner=INT(RND*3)
px=x(corner)
py=y(corner)
```

```
REM Plot points until a mouse button is pressed
WHILE MOUSE(0)=0
corner=INT(RND*3)      'Pick corner at random
px=px+(x(corner)-px)/2 'Move halfway towards corner...
py=py+(y(corner)-py)/2 'held in corner variable
PSET(px,py)           'Plot the point
WEND
```

incredibly complicated gasket is based on randomness.

The starting point for the gasket is a two dimensional plane, on which an isometric triangle is outlined by its three corners – we'll number these 0, 1 and 2. The Sierpiński gasket can be created on this plane by applying the following rules:

1. Pick one of the corners at random and go directly to it
2. Choose another at random, move halfway towards it and plot a point
3. Repeat from step 2

This type of repetition is known as an iterative process; each application of the rules is called an iteration. Common sense tells us that this random process will yield a random result but, the process eventually gives rise to an intricate and ordered structure, the Sierpiński gasket.

It is quite easy to write a program to perform this iterative process and thereby produce the Sierpiński gasket. An Amiga BASIC version of such a program is given in Listing 1. We'll be using Amiga BASIC throughout this series, not because it's a great language for chaos programming, but because most Amiga owners have got a copy of it. If you haven't got a copy, or would prefer using another language, don't worry, all the listings will be easy to convert.

Basically the program can be broken down into three sections. The first section dimensions two arrays to store the x and y positions of each of the three corners of the triangle, and places suitable values in them. The next section corresponds to stage one of the above process – it initialises the drawing position by randomly setting it to be at one of

the three corners. The drawing position is held in the px and py variable pair, and determines where the next point is to be plotted. The final section is the WHILE...WEND loop which actually plots the points – this loop represents stages two and three of the process defined earlier.

The only tricky area in this program is the part which moves the drawing position halfway towards a corner. This is done by finding the mid-point of the imaginary line between the current position and the relevant corner, and moving to it. The mid-point is found using a branch of

mathematics known as 'co-ordinate geometry'. This states that if there are two points with co-ordinates (x,y) and (x1,y1) respectively, the mid-point of the line between them is at $(x+(x1-x)/2, y+(y1-y)/2)$.

IS IT A FRACTAL?

The Sierpiński gasket exhibits two features which distinguish it as a fractal. The first is the fact that a complex and structured pattern is created by just a few simple rules. The Mandelbrot set (which will be covered later in the series) is probably the most famous example of this, as one equation gives rise to an infinitely rich structure.

The second point is that, if any part of the gasket's structure is sufficiently magnified, the same general shape can be seen, in this case the shape is an equilateral triangle. This property is called self-similarity, which also makes its most notable appearance in the Mandelbrot set. Note that self-similarity cannot be explored using optical magnification, as the resolution of the program's output is not sufficiently good. This means that the image must be magnified mathematically by completely recalculating the part of the image that needs to be enlarged.

Unlike fractals, normal geometrical shapes are not self-similar and lose their identity when magnified enough, for example a circle becomes a straight line. A convenient example of a shape losing its identity is the phenomenon of the Earth appearing to be flat to a

person standing on it, because they can only see a tiny fraction of its surface.

ZOOMING IN

Self-similarity can be seen in the Sierpiński triangle by altering the program in Listing 1. Just enlarge the triangle so that only a small part of it lies within the screen area. The program will still move the drawing position to each point, but will only plot points which lie in the output window. The triangle is enlarged by altering the positions of the three corners, which involves changing the section of the program which sets the corner positions. For example, a magnification of three can be produced by altering the lines, so:

```
x(0)=1105
y(0)=530
x(1)=25
y(1)=190
x(2)=2185
y(2)=190
```

When enlarging fractals it is imperative that the ratio of width to height (the aspect ratio) is kept constant. If this ratio is not maintained the fractal will become distorted, making self-similarity hard to spot. The Sierpiński gasket used in this article is 50% wider than it is tall. I have ensured that the enlarged gasket also has this property, thereby preserving the aspect ratio.

Something to note while experimenting with magnifications of the Sierpiński gasket is its lack of substance. This may sound bizarre but in fact all of the areas which appear to be comprised of solid black lines are actually full of triangular shaped holes. This is also true for consecutive magnifications, suggesting that the lines between the triangles are infinitely thin (hence non-existent), and implies the Sierpiński gasket to be nothing more than a group of holes!

Although turn of the century mathematicians were intrigued by the strange objects that they had discovered, they found it hard to continue their investigations due to the vast number of calculations required. Because of this, objects such as the Sierpiński triangle were regarded as nothing more than mathematical oddities for many years, until the advent of chaos, when natural processes were shown to exhibit similar behaviour. Next month we'll be looking at chaos in nature, with a population simulation to show that order can give rise to chaos.

This series of articles is based on Conrad Bessant's forthcoming book, Computers and Chaos: Amiga Edition, for details see Sigma Press on 0625-531035.

FURTHER EXPERIMENTATION

In the examples given here only one shape of triangle has been used, however, you should find that any triangle shape will work. Changing the shape is simply a matter of editing the lines which set the positions of the triangle's corners.

You could try using a shape with more than three corners, ie a shape other than a triangle. Only a few simple alterations are required to make the program produce a different shape, for example, to produce a square you must do the following:

- Alter the lines which dimension the position arrays to cater for four corners (0 to 3) instead of only three
- Edit the lines which set the positions of the corners so that the corners describe the outline of a square (two new lines will be needed to describe the fourth corner)
- Replace the line which randomly picks one corner out of three so that it picks one out of four instead

Why move only halfway toward a corner each time? Why not try moving two fifths of the way toward the corners? Changing this is useful if you are using shapes other than triangles. The results of these changes may not all be interesting, but without experimentation you never know.

The ultimate extension of the Sierpiński gasket principle is to create a program to produce the three dimensional Menger sponge. The Menger sponge is a cube made of cubic holes, just as the Sierpiński gasket is a triangle full of triangular holes.



HYTEC COMPUTERS

3929 MARTIN WAY ★ SUITE D ★ OLYMPIA, WASHINGTON 98506 ★ USA
 TELEPHONE: 0101-206-456-7656 ★ FAX: 0101-206-456-7657

★ ★ ★ ★ ★ PAY BY VISA ★ MASTERCARD ★ WIRE TRANSFER ★ BANK DRAFT ★ ★ ★ ★ ★

★ TELEPHONE HOURS: MONDAY THRU FRIDAY 4:00 P.M. - 1:00 A.M. ★ SHIPPING & SOME IMPORT COSTS EXTRA ★ ★

★ ★ ★ ★ ★ AFTER SEPTEMBER 10TH BE SURE TO CALL FOR OUR NEW TOLL-FREE NUMBER ★ ★ ★ ★ ★

DMI FLOPTICAL DRIVE

- ★ 20MB Internal £269.95
- ★ 20MB External £349.95
- ★ 20MB Optical Disk £13.95



★ Turbo 8MB Memory Board for the A500/A500+ Unpopulated £129.95

★ For each 2MB memory add £59.95
 ★ For each Shadow RAM add £9.95

BLIZZARD TURBO MEMORY BOARD

RocHard 500 IDE/SCSI

- ★ No Drive, No Memory £114.95
- ★ Quantum 52MB No Memory £249.95
- ★ Or add any hard drive listed below to the above price
- ★ For each 2MB memory Add £39.90

ACCELERATORS

CSA Mega MegaRacer 30mhz 68882	£249.95
CSA Mega MegaRacer 30mhz 68882	£310.95
CSA 36 Special 36/50mhz 68882	£430.95
Progressive 28mhz 040/500 4MB	£600.95
Progressive 28mhz 040/2000	£670.95
Progressive 28mhz 040/3000	£740.95
Mercury 28mhz 040 for A3000	£1300.95
Zee 28mhz 040 for A2000	£1429.05

★ GVP accelerators available - call for prices

AMIGA CUSTOM CHIPS

Kiekatani 1.3	£10.05
Kiekatani 2.0	£24.95
Fatter Ages 1MB	£23.95
Fatter Ages 2MB	£47.95
Super Deane	£22.95
GIA 2mhz 8520	£5.45

MODEMS

Seppimodem 2400	£54.05
Seppimodem 2400	£99.05
Seppimodem V 32bis 14400 baud	£114.05

★ US Robotics modems available - call for prices

MEMORY CHIPS

1MB X 8 68100 80ns	£19.95
4MB X 8 68100 80ns	£84.95
1MB X 4 DIP 80ns	£2.25
256K X 4 DIP 80ns	£2.45
1MB X 4 DIP 80ns	£14.95
1MB X 4 DIP 80ns	£19.05

MISCELLANEOUS

JIN Mouse	£11.05
RocTec Amiga Mouse	£13.05
XA-1 Keyboard Adapter	£37.95
CDTV Keyboard Connector	£ 9.05
CDTV Brick-able Joystick/Mouse/Arko	£39.05
RocLim AV 3.5" Ivory/Black	£47.95
SuperCard Ami II Copier	£24.05
Sybil Hardware/Software System	£40.95
RocMate 3.5" HD Enclosure	£64.95
GI Scanner w/ Touch-Up	£99.95
Bigfoot 2900watt A500 Power	£54.95
Power Plus 2000 230watt	£110.95
AMAS II MIDI/Digizer	£40.95
Stadio 16/AD1012 12bit Sound	£300.05
386SX Bridgeboard	£390.95
Archive Pythos DAT 2.0 GIG	£969.95

BARE HARD DRIVES

★ 3.5" Low Profile 1/2 Height ★	
Maxtor 65MB SCSI	£149.05
Maxtor 60MB SCSI	£192.05
Maxtor 130MB SCSI	£220.05
Maxtor 213MB SCSI	£300.95
Maxtor 340MB SCSI	£509.95
Maxtor 535MB SCSI	£769.95
Quantum 82MB SCSI	£140.95
DeeStar 120MB SCSI	£244.95
Maxtor 80MB IDE	£102.95
Maxtor 130MB IDE	£224.95
Maxtor 213MB IDE	£334.95
Maxtor 340MB IDE	£584.05
Fujitsu 425MB IDE	£694.05
Fujitsu 520MB IDE	£734.05

★ Large Capacity 5.25" Full Height ★

Maxtor 1.2GB SCSI	£1124.05
Maxtor 1.7GB SCSI	£1530.05
Fujitsu 1.7GB SCSI	£1799.95
Microplus 1.3GB SCSI	£1270.95
Microplus 1.7GB SCSI	£1720.95
Microplus 2.1GB SCSI	£2100.95

★ Amiga 600 internal hard drives and other hard drive sizes and brands available - call for prices

HARD DRIVE CONTROLLERS

★ Amiga 500 Controllers ★	
IVS Trumpcard 500 SCSI	£79.05
IVS Grand Slam 500 8MB/0 SCSI	£100.05
IVS Trumpcard 500AT 8MB/0 IDE	£114.95
AdiDE 40 KHz IDE	£90.95
Datalflyer Express 8MB/0 IDE	£118.95
Datalflyer Express 8MB/0 SCSI	£124.95
Datalflyer 500 SCSI	£94.95
★ Amiga 2000 Controllers ★	
IVS Trumpcard Professional SCSI	£97.95
IVS Grand Slam 2000 8MB/0 SCSI	£164.05
Nexus 2000 8MB/0 SCSI	£120.05
Datalflyer 2000 IDE	£54.05
Datalflyer 2000 SCSI	£59.05

★ Call for prices on GVP controllers and custom hard drive, controller and memory combinations

REMOVABLE MEDIA

SyDeest 44MB Internal	£240.95
SyDeest 44MB Cartridge	£54.95
SyDeest 88MB Internal	£200.95
SyDeest 88MB Cartridge	£78.05
DMI RW Optical 120MB Ext	£909.05

MEMORY BOARDS

★ Amiga 500 Memory ★	
Eureka 512K w/ clock	£18.05
Baseboard 4MB/0	£49.95
SupraRAM 500RX 8MB/2MB	£114.05
★ Amiga 500 Plus Memory ★	
Baseboard Plus 1MB/0	£10.95
Baseboard Plus 4MB/0	£40.95
★ Amiga 500 Memory ★	
Baseboard 601 1MB/0 w/ clock	£10.95
Baseboard 601 1MB/0 w/o clock	£10.05
★ Amiga 2000/2000 Memory ★	
Datalflyer RAM 500/2000 8MB/0	£59.05
Artes 2000 Memory Board 8MB/0	£74.05
Coldice Image A2000 RAM 8MB/2MB	£109.95
ProRAM 3000 64MB/0	£229.05
★ Memory - Miscellaneous ★	
CSA 512K Static RAM 70ns	£66.95
CSA 4MB Memory Board MMR	£260.95
DKB 2632 112MB 4MB RAM A2630	£390.95

VIDEO HARDWARE

Richer Frer Video II NTSC/PAL	£150.05
DCTV 24bit Colour PAL	£200.05
DMI Resolver 'A' NTSC/PAL	£549.05



AMIGA REPAIRS JUST £44.95 inc.



- ★ Commodore registered
- ★ Over 10 years experience with Commodore computers
- ★ 20 qualified technician engineers at your disposal
- ★ We will undertake to repair your Amiga 500 computer for just £44.95 including parts, labour, VAT and post & packing
- ★ Most computers should be repaired within 24 hours of booking in.
- ★ Prices include full service check, overhaul, soak-test and replacement of power supply unit if necessary
- ★ Repairs to keyboard and disk drive also included (£25 extra if these units are unrepairable and require complete replacements)
- ★ All repairs covered by a 90 day warranty



Upgrade your Amiga from 512K to 1Mb of memory for just £25.00
SPECIAL EXCLUSIVE OFFER:

If you submit your computer to ourselves for repair, enclosing this advert along with just an additional £25, we will supply and fit a 512K memory expansion at no extra cost.

How to take advantage of this exceptional offer: simply send or hand deliver your machine to the workshop address detailed right, enclosing payment and this advert and we will do the rest. (If possible please include a daytime telephone number and fault description).

* If you require 24 hour courier to your door, please add £5 else your computer will be sent back by contract parcel post.

WTS ELECTRONICS LTD

STUDIO MASTER HOUSE
 CHAUL END LANE
 LUTON, BEDS, LU4 8EZ

Telephone (0582) 491949 - (4 lines)

WTS reserve the right to refuse machines that in our opinion are tampered with, to an extent beyond reasonable repair.

MEGA GAMES PACK

New Amiga 600 MEGA GAMES PACKS

HARWOODS MEGA GAMES PACKS ARE NOW BASED ON THE EXCITING NEW AMIGA A600 RANGE OF 1Mb COMPUTERS AND ARE ONLY AVAILABLE FROM GORDON HARWOOD COMPUTERS... 'The Original Pack Specialists'

ALL OUR AMIGAS ARE UNITED KINGDOM SPECIFICATION AND INCLUDE THE FOLLOWING...

A600FD

1 Mb. Disk Drive, 1Mb RAM, Integral TV Modulator, 4096 Colours, Multi Tasking, Speech Synthesis, 4 Channel Digital Stereo Sound, Mouse, Workbench Disks & Manuals, ALL Connecting Cables, One Great Game from Commodore & Deluxe Paint III

A600HD

Spec. as above but with a 20 Mb. Hard Drive fitted.

PLEASE NOTE...

Neither the Commodore Game or Deluxe Paint III are included with the A600HD



**MEGA
GAMES
PACK**



GAMES



PACK 1

THAT'S RIGHT HARWOODS HAVE PUT TOGETHER THE ULTIMATE AMIGA PACKS YET AGAIN... STARTING WITH THE MEGA GAMES PACK 1 WHICH INCLUDES SOME GREAT GAMES!

Just look at what you get NOW...

- **AMIGA A600FD COMPUTER WITH A FULL 1Mb. OF MEMORY**
- **THE LATEST GREAT COMMODORE GAME** - With every A600FD you can look forward to receiving a fantastic leading title supplied by CBM which periodically changes [Supplied with A600FD ONLY not A600HD's].
- **DELUXE PAINT III** [Supplied with A600FD ONLY not A600HD's]
- **TAILORED OUST COVER AND MOUSE MAT**
- **AND A SUPERB HIGH QUALITY MICROSWITCHED JOYSTICK,**
- **PLUS... 18 MORE GREAT GAMES, THERE'S SOMETHING FOR EVERYONE...**
 - BLOODWYCH** - Fantasy role-playing game, great interaction with your computer created environment
 - BUBBLE+** - Help the dawdling ghost and the soap bubble, escape from the old deserted manor house
 - CAPTAIN BLOOD** - Astonishing creatures and animated 3D graphics, this is a game you just have to play
 - ELIMINATOR** - A progressive multi stage flying shoot 'em up, on a long winding course, survive if you can!
 - HOSTAGES** - You must get your team and hostages out of the terrorist overrun embassy, without loss of life
 - JUMPING JACKSON** - In a deluge of colour and sound save the earth from sadness and melancholy music
 - KRYPTON EGG** - A classic Breakout game, 60 screens, separated by 6 combat sequences
 - LANCASTER** - Your mission is to fly the classic WWII bomber on its dangerous raids over enemy territory
 - LOMBARD RAC RALLY** - You drive your 300 bhp Sierra Cosworth through demanding stages of the rally
 - PURPLE SATURN DAY** - Four arcade games, an exciting high speed trip into total cosmic 3D space
 - SAFARI GUNS** - Live the African experience in an animal sanctuary, track the poachers & ivory traffickers
 - STIR CRAZY** (Featuring Bobo) - Bobo & his inmates are planning a stunning trampoline jump prison escape
 - SKYCHASE** - Airborne combat for every simulation fan. In this one or two player game, battle against your MIG flying adversary in your F-16 Falcon.
 - SKYFOX II** - Skyfox II, the only ship fast enough to carry on the Skyfox legend. Fight to blow your federation enemies from the Galaxy, at speeds of 9000 kilometres/second!
 - STRIKE FORCE HARRIER** - Puts you in the cockpit of one of Britain's most exciting fighter aircraft. Multiple skill levels let you progress to become an ace pilot
 - TINTIN ON THE MOON** - We've been captured by Colonel Jorgen and he's trying to scupper the moon mission. Come on Tintin, you're the only one who can save us, and be the first on the moon
 - TV SPORTS FOOTBALL** - Strap on your helmet for American football simulation that looks like the real thing.
 - XENON 2 MEGABLAST** - This time it's war! The Xenites are back and have thrown time itself into turmoil.

Why not have the Amiga A600HD machine with a 20Mb. Hard Drive instead of the A600FD for only £79.95 EXTRA

Don't Forget... That whilst our Packs always offer superb value and are ideal for most buyers... if you wish to buy a computer without our games and/or accessories, simply call us where we will be only too pleased to offer you **THE MOST COMPETITIVE UK DEAL** tailored just to suit your needs.

Amiga A500Plus machines may still be available at special prices. Please phone!

WHY NOT ADD TEN EXTRA GAMES WHEN YOU BUY YOUR NEW AMIGA A600 FOR JUST £10!!! FANTASTIC HARWOODS VALUE!!!
ASTORM, DUNGEON QUEST, E-MOTION, GRAND MONSTER SLAM, RVF HONOA, DRIVIN' FORCE, PIPEMANIA, ROCK 'N' ROLL, SKWEEK, TOWER OF BABEL

A600FD PACK Priced at an INCREDIBLE

£324.95

A600HD PACK FOR AN EXTRA...

That's right have Games Pack 1 with an Amiga A600HD with 20Mb. Hard Drive in place of the A600FD

£124.95

EXTRA Including VAT

We reserve the right to substitute individual software titles or pack items should the need arise.



Nintendo



CITIZEN



WHO GIVES YOUR

- Free Courier Collection* and Delivery for warranty service of any major hardware item (1 year)
- 30 days faulty exchange for new
- Free standard delivery service*
- Exclusive ex-directory technical support line for expert assistance
- Free cable & dust covers with applicable hardware products
- Over 10 years of expertise with Commodore products
- Add all these up - compare with the rest - and you'll see why we are THE SUPPLIER that over 50,000 satisfied Amiga owners have already chosen
- Mainland UK

HARWOOD'S BRILLIANT 1Mb AMIGA 600FD MEGA GAMES PACK 2

That's right you get the fantastic Amiga & ALL THE EXTRAS detailed in Harwoods Mega Games Pack 1 AND you also get...

THE PHILIPS CM8833/II STEREO COLOUR MONITOR



OR... YOU CAN CHOOSE A PHILIPS MONITOR TV for just £20 EXTRA! See page 3 for FULL details of this remarkable Fast Test Monitor TV

£524.95 including VAT

A600HD PACK 2 FOR AN EXTRA... **£124.95** including VAT

Our monitor section on page 3 gives full details for your choice of Philips Monitors & Monitor TVs

HARWOOD'S GREAT 1Mb AMIGA A600FD MEGA GAMES PACK 3

That's right you get the fantastic Amiga & ALL THE EXTRAS detailed in Harwoods Mega Games Pack 1 (far left) AND... then you also get...

THE SUPERB PHILIPS CM8833/II STEREO COLOUR MONITOR

Our monitor section on page 3 gives full details for your choice of Philips Monitors & Monitor TVs

Plus... THE SUPER STAR LC 200 COLOUR PRINTER...

185/40 cps, Full Colour 9 Pin NLO Dot Matrix Printer with a FREE Dust Cover & cable to your Amiga (See printer panel for details)

£719.95 including VAT

A600HD PACK 3 FOR AN EXTRA... **£124.95** including VAT



OR... YOU CAN CHOOSE A PHILIPS MONITOR TV for just £20 EXTRA! See page 3 for FULL details of this remarkable Fast Test Monitor TV

£719.95 including VAT

A600HD PACK 3 FOR AN EXTRA... **£124.95** including VAT

"IT'S THE BUSINESS"

A TRULY PROFESSIONAL PACKAGE SPECIFICALLY FOR THE BUSINESS MINDED AMIGA USER. THIS ONE SHOULD FULFIL EVERY AREA OF HOME BUSINESS YOU'RE LIKELY TO NEED!

THE BUSINESS PACK FROM HARWOODS INCLUDES ALL THE FOLLOWING...

AMIGA A600FD WITH 1Mb. MEMORY

PHILIPS CM 8833/II STEREO COLOUR MONITOR

See Monitor Panel on Page 3 for Details

STAR LC200 9 PIN NLO FULL COLOUR PRINTER

See Printer Panel on Page 3 for Details

A HOST OF BUSINESS SOFTWARE & ACCESSORIES...
PEN PAL V1.3 (Word Processor)... 1Mb.
SUPERBASE II PERSONAL (Database)

SUPERPLAN (Spreadsheets)... 1Mb

Plus... A GREAT CBM GAME
DELUXE PAINT III
Now with ANIMATION

MICROSWITCHED JOYSTICK
16 BLANK 3.5" DISKS
DISK LIBRARY CASE
MOUSE MAT
3 TAILORED DUST COVERS



OR... YOU CAN CHOOSE A PHILIPS MONITOR TV for just £20 EXTRA! See page 3 for FULL details of this remarkable Fast Test Monitor TV

£784.95 including VAT

A600HD POWERPRO PACK FOR AN EXTRA... **£124.95** including VAT

ADD A CUMANA CAX 354 2ND DRIVE FOR JUST £50

£784.95 including VAT

A600HD POWERPRO PACK FOR AN EXTRA... **£124.95** including VAT

A600HD POWERPRO PACK FOR AN EXTRA... **£124.95** including VAT

PRIMARY & JUNIOR PACK A

Get your children off to the right computing start with this software learn and play Compendium 6 pack...

KIDS TYPE, WEATHER WATCHER, CALENDAR QUIZ, WORDS & NUMBERS, GAME SET & MATCH, WHAT IS IT? - WHERE IS IT?

Active, engaging young minds will love the fun of these six entertaining but educational titles. Your children probably won't even realise that their "lessons" have begun!

HOMEBASE
Ideal home storage system. Keep household lists, student records etc. Easy to use "push button" controls.

PRIMARY MATHS COURSE
Around 24 modules in this course from 3 yrs old right up to secondary level. Follows M.C.

READING & WRITING COURSE
24 module course. Teaching from the computer and books. For early starters & the dyslexic.

A GREAT EDUCATIONAL PACK FOR YOUR CHILDREN AT A FRACTION OF THE NORMAL COST

GCSE/O' LEVEL PACK B
GCSE examination level studies on your Amiga computer that's fun!

MICRO ENGLISH, MICRO FRENCH AND MICRO MATHS

A set of three complete self-tuition courses to GCSE level which can also be used for revision work. All programs adhere to the National Curriculum and were designed and tested in schools by professional teachers.

MICRO FRENCH includes "fast speed" to help your accent! PEN PAL - Graphical Word Processor

A fantastic word processor with all the tools you'll need to create effective written work. Ideal for home work projects etc. or for the families letters. Just wraps automatically around graphics, even as you type! Includes a built-in database and Forms Manager.

HOMEBASE
Homework is the ideal information storage program for things like household lists, student notes, and children's educational projects. Inc. clearly labelled "push button" controls and clear comprehensive reference manuals.

A GREAT EDUCATIONAL PACK FOR YOUR CHILDREN AT A FRACTION OF THE NORMAL COST

£69.95 including VAT

£89.95 including VAT



£69.95 including VAT

£89.95 including VAT

£89.95 including VAT

£89.95 including VAT

£89.95 including VAT

£89.95 including VAT

£89.95 including VAT

£89.95 including VAT

£89.95 including VAT

£89.95 including VAT

Compare our Service

Before you choose from whom to purchase, please phone us. We are always happy to discuss your requirements, and answer any queries you may have...

- ORDER BY PHONE: Phone our Order Hotline with your Access Visa, Mastercard, Switch or Lombard Creditcharge Card quoting number & expiry date (Diners, Curry, NACS and other store cards are Lombard Creditcharge and are accepted by us).
- ORDER BY POST: Make cheques, bankers building society drafts, or postal orders payable to GORDON HARWOOD COMPUTERS (Personal business cheques take 7 days to clear from day of receipt whereas your order will be despatched). Please send Name, Address, and most importantly if possible, a Daytime Telephone Number along with your order requirements. Please check you are ordering from one of our latest advertisements before posting (phone if you require confirmation). Please remember that for example many September publications appear during August, therefore prices you see may have changed, either up or down!
- FREE POSTAL DELIVERY: FREE within 14 working days. UK Mainland only. OR COURIER SERVICE: Add £6.50 per major item for next working day delivery. UK Mainland most regions.
- EXPORT ORDERS: Most items are available at TAX FREE PRICES to non-UK residents and service personnel when visiting export shipment. Please contact us.

REMEMBER AFTER YOU'VE BOUGHT FROM HARWOODS, WE'LL STILL BE HERE.

TECHNICAL SUPPORT: You will be given our Exclusive Technical Support Phone Number. It should you require any help or advice on any aspect of the system you have purchased. 12 MONTH WARRANTY: Items proving faulty within 30 days of purchase are replaced with NEW UNITS unless otherwise stated. For the whole guarantee period, warranty service will be completely FREE OF CHARGE.

COLLECTION FACILITY: Any computer, monitor or printer requiring warranty service can be collected from your home. FREE OF CHARGE during the guarantee period (UK Mainland only) and a FAST turnaround is GUARANTEED by our OWN ENGINEERS! FULL TESTING PROCEDURE: All computers are tested prior to despatch, and all items are supplied with mains plug and leads as required - just connect up and use straight away.

REMEMBER WE'RE NOT JUST ANOTHER MAIL ORDER COMPANY...

All listed prices are what YOU PAY, and there are NO HIDDEN EXTRAS. VAT and postage are included, and prices are correct at time of going to press (Pack details may vary from time to time). Offers are subject to availability and to being the latest advertised packs and prices. Our offers are NOT supplied on a trial basis. E&OE.

FINANCE FACILITIES: tailored to suit your needs. Written details on request. Gordon Harwood Computers offer facilities to purchase using our budget account scheme APR 36.8% (Variable). Available to most adults of eighteen years or over, subject to status. Simply phone or write and we will send you written details along with an application form. Applications, required in advance, available to full time U.K. mainland residents and overseas British forces personnel. Showroom visitors, please ask for details of our In-store "Instant Account". Written quotations on request.

If you are already the holder of a Lombard Credit Charge Card you can use this to purchase from us (subject to your personal card limit).

VISIT OUR SPACIOUS SHOWROOM: Please pay us a visit where our full range of advertised products & more, is available at the SAME COMPETITIVE PRICES. In the pleasant surroundings at our purpose built showroom (see "opening times") There's plenty of FREE parking close by too!

OPENING TIMES: 9.00 until 5.00 Monday to Saturday. 9.00 until 1.00 Wednesday. Closed on Sundays

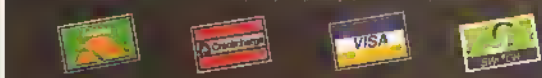


GORDON HARWOOD Computers

Enquiries & Order Line:

0773 836781

Finance Facilities Available*



GORDON HARWOOD COMPUTERS DEPARTMENT

66, NEW STREET ALFRETON, DERBYSHIRE, DE5 7BR

TEL: 0773 836781 FAX: 0773 831046

The Closer you look, The Better we look



FREE...
Fully Tailored
Dust Cover with all
Dot Matrix Printers

PRINTERS

**CHECK OUR NEW
LOWER PRICES**

All printers in our range include a standard Canonics/Parallel Port for direct connection to Amiga, PC's, Atari ST's, Archimedes etc. With all our printers you'll get a Free Lead to your computer and with Dot Matrix Printers you also get a Free Quality Dust Cover.

The Harwoods Amiga Help Bulletins provided with ALL printers get you going straight away by covering specific Workbench Set Up Parameters etc.

CITIZEN 1200+ 9 PIN MONO - Up to 120/25 cps **£134.95**
Very reliable low cost printer with interchangeable interfaces for Canonics/RS232/serial type (C64 etc.) 2 Year manufacturers warranty

STAR LC20 9 PIN MONO - Up to 150/38 cps **£154.95**
Simultaneous, continuous and single sheet stationery, great paper handling 240 x 240 dpi Graphics Multiple font options

STAR LC200 9 PIN COLOUR PRINTER - 185/40 cps **£199.95**
80 Column Dot Matrix Push/pull tractor, rear/bottom feeds & Reverse paper feeds Paper park with auto single sheet loading 240 x 240 dpi Colour Graphics Colour & mono ribbons 12 month warranty

CITIZEN SWIFT 9 PIN COLOUR - 160/40cps **£199.95**
8K Buffer, 4 Fonts Feed for labels/multi part stationery Push and pull tractor 240 x 240 dpi Colour Graphics 2 Year Citizen warranty

STAR SJ48 INKJET PRINTER **£239.95**
64 Nozzle Ink Jet Optional Hi-Cad battery Comes with AC adaptor Emulates Epson LO/IBM Large 28K Buffer Proprietary full compatibility 360 x 360 dpi near laser print quality

CANON BJ10ex NOW AVAILABLE FROM HARWOODS **£229.95**
A fantastic near laser quality Inkjet printer (spec as SJ48 above)

STAR LC24/200 24 PIN MONO - 220/55 cps **£239.95**
Mono version of LC24/200 Colour, same spec except for a smaller 7K buffer

STAR LC24/200 24 PIN COLOUR - 220/55 cps **£289.95**
80 Column Dot Matrix Push/pull tractor & rear/bottom feeds Paper park with auto single sheet loading 240 x 240 dpi Colour Graphics Colour & mono ribbons 12 month warranty

NEW 24 PIN CITIZEN 224 COLOUR - 160/53 cps **£229.95**
80 Column Dot Matrix with 4 Fonts Push & pull tractor feeds Complete paper parking facilities Supplied with mono & colour ribbons Full 2 Year Citizen Warranty

NEW 24 Pin CITIZEN SWIFT 24E COLOUR - 180/60 cps **£299.95**
80 Column Dot Matrix with 7 Fonts Push/pull tractor feeds Complete paper parking facilities Supplied with mono & colour ribbons Full 2 Year Citizen Warranty

STAR XB 24 PIN COLOUR RANGE... XB24-200 and XB24-250 - 275/80 cps **£399.95**
Exceptional print quality 4 x 48Pin super letter quality fonts 14 x 24Pin near letter quality fonts 360 x 360 dpi Colour Graphics Buffer: 28K (XB24/200) & 76K (XB 24/250) 12mths on-site warranty (UK Mainland)

HEWLETT PACKARD PAINTJET COLOUR A4 INKJET **£579.95**
For presentation, graphics/DTP, CAD and technical/scientific applications Parallel/Canonics or Serial RS232 IF (specify with order, MAC option available) A full page of colour graphics in 4 minutes (typical) Will print transparencies Non impact printing, virtually silent, 43db 1Yr on-site warranty (UK Mainland)

STARSCRIPT - 4ppm POSTSCRIPT COMPATIBLE LASER **£999.95**
A4 Laser Printer, will connect to PC, Amiga, Atari ST, Macintosh etc. 600 DPI, 2Mb. Upgradable to 5Mb. Complete with 'StarScript' Serial & Parallel I/F for Macs Emulations Inc: HP Series II, Epson (Stars version of postscript) AppleLink I/F for Macs EX800, IBM Proprietary & Diablo 630 49 quality fonts 1Yr on site warranty (UK Mainland)

PRINTER RIBBONS

PRINTER	PRINTER TYPE	BLACK RIBBON	BLACK RIBBON 'SIX PACK'	COLOUR RIBBON	COLOUR RIBBON 'SIX PACK'	
CITIZEN 1200+	BLACK ONLY	£4.95	£24.95	N/A	N/A	
CITIZEN 124	BLACK ONLY	£4.95	£24.95	N/A	N/A	
CITIZEN SWIFT 9	BLACK/COLOUR	£4.95	£24.95	£16.95	£99.95	
SWIFT 24/24E/224	BLACK/COLOUR	£4.95	£24.95	£16.95	£99.95	
STAR LC16/200	BLACK/COLOUR	£4.50	£24.95	£6.90	£36.50	
STAR LC200	BLACK/COLOUR	£6.95 ZX9	£36.95 ZX9	£12.95 X20CL	£69.95 X20CL	
STAR LC24/200	BLACK/COLOUR	£8.95 Z24	£48.95 Z24	£14.95 X24CL	£74.95 X24CL	
STAR XB RANGE	BLACK/COLOUR	£8.95 Z24	£48.95 Z24	£14.95 X24CL	£74.95 X24CL	
STAR SJ48 INK CARTRIDGE	BLACK ONLY	Also compatible with Apple Stylewriter and Canon Bubblejet				£15.95ea.

PRINTER ACCESSORIES

Citizen 1200+ Sheet Feeder	£89.95	Star LC20 Auto Sheet Feeder	£14.95	Hewlett Packard PaintJet Original Printer Accessories...	£24.95
Citizen 1200+ Parallel Interface	£41.95	Star LC24-10 32K Buffer	£17.95	Black Ink Cartridge	£24.95
Citizen 1200+ CSM C64 Serial Interface	£134.95	Star LC24-10 Auto Sheet Feeder	£24.95	Colour Ink Cartridge	£29.95
Citizen 1240 32K Buffer	£13.95	Star LC200 Automatic Sheet Feeder	£38.95	Single Sheet Printer Paper	£21.95
Citizen 1240 Semi-Auto Sheet Feeder	£38.95	Star LC24-200 32K Printer Buffer	£34.95	Z-Fold Printer Paper	£19.95
Citizen 1240 Automatic Sheet Feeder	£79.95	Star LC24-200 Auto Sheet Feeder	£74.95	Transparency Paper Pack of 50 Sheets	£44.95
Citizen 1240 Printer Stand	£24.95	Star SJ48 Automatic Sheet Feeder	£64.95		
Citizen Swift 9 Semi-Auto Sheet Feeder	£24.95	Star SJ48 Hi-Cad Battery	£34.95		
Citizen Swift 9 Automatic Sheet Feeder	£24.95	Star XB 24-200 Pull Tractor	£24.95		
Citizen Swift 9 Printer Stand	£24.95	Star XB 24-200 Port Can-Style TBA	£29.95		
Citizen Swift 9K Printer Stand	£24.95	Star XB 24-200 28K Printer Buffer	£24.95		
Citizen Swift 9K Automatic Sheet Feeder	£130.95	Star XB 24-200 Auto Sheet Feeder	£114.95		
Citizen Swift 24K Printer Buffer	£10.95	Star XB 24-200 Dual Bin Smt. Feeder	£24.95		
Citizen Swift 24K Semi-Auto Sheet Feeder	£24.95	Star XB24-200 Pull Tractor	£24.95		
Citizen Swift 24K Automatic Sheet Feeder	£79.95	Star XB 24-200 Port Can-Style TBA	£29.95		
Citizen Swift 24K Printer Stand	£24.95	Star XB 24-200 28K Printer Buffer	£24.95		
Citizen Swift 24K Auto Sheet Feeder	£134.95	Star XB 24-200 Auto Sheet Feeder	£114.95		
Citizen Swift 24K Printer Stand	£24.95	Star XB 24-200 Dual Bin Smt. Feeder	£24.95		

BUY TEN GREAT GAMES WITH ANY DISPLAY FOR JUST £10!!!

MONITORS AND MONITOR TV's

CM8833/II INCLUDES FREE... £19 STEALTH FIGHTER

Harwoods stock a complete range of both Monitors & Monitor TV's to give you your perfect solution to the type of display to buy.

PHILIPS CM8833/II 14" Stereo High Resolution Colour Monitor **£204.95**

The ever popular 14-inch Philips CM 8833 MkII. Its versatility means you not only get excellent colour graphics & text performance with a wide range of personal computers, but when connected to a VCR, you get an amazing 600 pixel TV picture. With the 8833 MkII, Harwoods give you the complete set up, to get you going straight away... Monitor, RGB picture and Stereo Audio Cables, Tailored dust cover, and 12 Months on site service warranty. RGB/AD, TTL, Composite, Video & stereo audio inputs. Can be used as a TV with VCR or Tuner. Also as a Video Camera display monitor. Retractable stand. Twin Stereo Speakers. Headphone Jack Socket. FREE lead for your computer. FREE 12 month on site service warranty.

COMMODORE 1084S 14" Stereo High Resolution Colour Monitor **£249.95**

Commodore's Own Stereo High Resolution Colour Monitor with... RGB/AD/TTL, Composite, Video/Audio Inputs. Can be used as TV with VCR or Tuner. Twin Speakers for stereo output. Supplied with cables for A500/600, CGA PC, IC16-64-128.

PHILIPS 15" FASTEXT TELETEXT TV MONITOR **£239.95**

SUPERB DEFINITION PHILIPS MONITOR TV, IDEAL FOR AMIGA OR CDTV USERS, GIVING FOR THE FIRST TIME TRUE MONITOR QUALITY FROM A FULL FEATURE TELETEXT TV AT AN AFFORDABLE PRICE! LOOK AT THE FEATURES... Direct Start Connector for Amiga, CDTV, VCR OR SATELLITE RECEIVER. RGB/AD, Composite Video & audio inputs. FULL TELETEXT FACILITIES (FOR THIS FACILITY EXTERNAL AERIAL SHOULD BE USED). Headphone Jack Socket. FULL TWO YEAR GUARANTEE. 2000 CHARACTER HIGH DEFINITION FST TUBE. SUPPLIED WITH LOOP AERIAL. REMOTE CONTROL. FREE lead for YOUR computer (IF YOU WOULD LIKE THE MONITOR TV IN OUR PACKS 2, 3, AND POWERPRO, AT JUST £20 EXTRA, TO REPLACE THE 8833/II, SIMPLY ADVISE US AT THE TIME OF ORDERING). It's important to remember that most TV Monitors, are still first and foremost televisions, meaning that their average 400 pixel tube display 50% lower resolution than a monitor! cannot be guaranteed to display 80 column text clearly without risking eye strain. If choosing a Television Monitor ensure it has the latest 2000 character tube capability, meaning it can handle the Amigas' 80 characters, by 25 line output clearly.

10 GREAT GAMES WITH YOUR TV OR MONITOR FOR ONLY £10 (ie. These games are available with Harwoods Amiga Packs 1, 2, 3, & Powerpro...see details on pages 1 & 2 of this ad!!!)

AMIGA DISK DRIVES

Cumana CAX354 3.5" External 2nd Drive. **£54.95**
Features Include: Long connecting cable. Access Light. 1Mb. (800K Formatted) Capacity. Throughput. Enable/Disable Switch. Compatible with Amiga 500/600/1000/1500/2000/3000 and CDTV. NOW SUPPLIED WITH A FREE 3.5" Disk Head Cleaner

GVP 52-420Mb HARD DISK DRIVES WITH MEMORY EXPANSIONS UP TO 8Mb.
Capacities of 52 to 420Mb. Connects to sidecar bus (LH side A500/A500 Plus). Autoboosts with Kickstart 1.3/2.0, boot enable/disable switch. Up to 8 Mb of RAM. SCSI Port allows up to 7 other devices to be connected. Supplied with easy to use software. 2 Year Warranty. Dedicated PSU. Mini slot for future expansion. PC-AT Emulator planned to be available for 1992.

GVP AMIGA A500 HARD DRIVES **GVP AMIGA 1500/2000 HARD DRIVES**

RAM SIZE	52Mb.	120Mb.	240Mb.	420Mb.
0Mb.	£349.95	£459.95	£729.95	
2Mb.	£419.95	£529.95	£799.95	
4Mb.	£489.95	£599.95	£869.95	
8Mb.	£629.95	£739.95	£999.95	

RAM SIZE	52Mb.	120Mb.	240Mb.	420Mb.
0Mb.	£289.95	£409.95	£639.95	£1169.95
2Mb.	£359.95	£479.95	£709.95	£1239.95
4Mb.	£429.95	£549.95	£779.95	£1309.95
8Mb.	£559.95	£679.95	£899.95	£1429.95

CALL FOR MEMORY UPGRADE PRICES IF YOU ALREADY ARE A GVP OWNER!

AMIGA MEMORY EXPANSION HARWOODS AMIGA 1Mb PRO-RAM PLUS

ADD MDRE PDWDR TO YOUR AMIGA 500 PLUS WITH A FULL 1Mb. UPGRADE!!!

- 1Mb. RAM expansion for the Amiga 500 Plus
- Gives a total of 2Mb. of RAM
- Easily fitted without any dismantling in the trapdoor expansion slot underneath Amiga. DOESN'T Invalidate your warranty!
- Low power consumption. 2 Yr Guarantee!

NEW LOWER PRICE

A GREAT NEW OFFER FROM HARWOODS

Only... £39.95

0.5 Mb PRO-RAM

- Compatible with Amiga A500 and 500 Plus
- Gives A500 a total of 1Mb Memory + Clock
- Gives 500 Plus a total of 1.5Mb Memory

Only... £29.95

LOOK OUT FOR THE A600FD/HD UPGRADE AVAILABLE SOON!!!



AMIGA CDTV
Multimedia package
NEW
Fantastic value packages!
CDTV Player
Amiga 486 Keyboard
Remote mouse 3.5" floppy disk drive.
ONLY £599.95
Or trade in your old Amiga for a big reduction!
PHONE FOR DETAILS

CDTV

... CAN, THE CONCEPT OF A NEW, MORE POWERFUL AMIGA...

... MEMORY, AND A COMPACT DISK DRIVE OF ALMOST INFINITE SIZE. A DISK DRIVE SO VAST, IT CAN HOLD MILLIONS OF DIGITS OF DATA. THIS DATA COULD BE, SPEECH, ANIMATED PICTURES, DIGITISED STEREO SOUND, COMPUTER IMAGES OR WHOLE ENCYCLOPAEDIAS... AND MORE.

... THIS AND YOU CAN START TO GRASP THE CONCEPT OF CDTV
FREE CDTV STARTER PACK ONLY FROM HARWOODS!!!

... YOU CHOOSE YOUR CDTV FROM GORDON HARWOOD, NOT ONLY DO YOU GET OUR LEGENDARY SERVICE, BUT YOU GET A CDTV STARTER PACK, TO GET YOU EXPLORING YOUR NEW WORLD - STRAIGHTAWAY.

... INCLUDES A SUPERB SELECTION OF CD DISK TITLES INCLUDING THE WELCOME TUTORIAL & HUTCHINSONS ENCYCLOPAEDIA, PLUS ... FIVE GAMES, SHERLOCK HOLMES & THE HOUND OF THE BASKERVILLES, SIM CITY, CHAOS IN ANDROMEDA, A TOWN WITH NO NAME, AND THE ACCLAIMED LEMMINGS, WORTH IN TOTAL ALMOST £200.00, IN ADDITION IS A FREE INFRARED REMOTE CONTROLLER. EVERYTHING TO GET YOU STARTED!

£499.95

CDTV ACCESSORIES

Please call for latest availability.

CD 1220 KEYBOARD
CD 1252 MOUSE
CD 1200 TRACKBALL

AN 89 KEY QWERTY KEYBOARD **£49.95**
INFRARED MOUSE WITH BATTERY SAVER. **£49.95**
INFRARED TRACKBALL, WITH THE OPTION OF DIRECT CONNECTION TO EXTEND BATTERY LIFE. **£79.95**
DUPLICATES FUNCTIONS OF 2 BUTTON MOUSE & INCLUDES TWO 9 PIN PORTS FOR STD. JOYSTICKS FOR HOLDING CD WITHIN DRIVE **£9.95**
PERSONAL RAM CARD CONTAINING 64K OF MEMORY FOR STORING DATA OR AS A BOOKMARK FACILITY WITHIN CDTV **£79.95**
A LARGER PERSONAL RAM CARD, 512K OF MEMORY FOR STORING DATA ON CDTV **£249.95**

CBM FLOPPY DRIVE 3.5" FLOPPY DRIVE WITH CAPACITY, MATCHING BLACK FINISH. SUPPLIED WITH WORKBENCH DISKS/MANUALS etc. **£99.95**
CD 1301 GENLOCK PAL BASED VIDEO INTERFACE CARD FOR SUPERIMPOSING CDTV IMAGES OVER A VIDEO SIGNAL PROVIDED BY ANY STD VIDEO SOURCE **£149.95**
ROCLITE 3.5" DRIVE CDTV COMPATIBLE AND AND STYLED IN MATCHING BLACK. **£69.95**

Plus lots of Great CDTV Software in stock!!!



EDUCATION SOFTWARE

DON'T JUST PLAY GAMES WHEN YOU CAN LEARN WITH YOUR AMIGA TOO!

MICRO MATHS - 24 easy to use programs for GCSE (O' Level) revision or self tuition	£18.95
MEGA MATHS - A 9 level step by step tuition course. For mature beginners, 'A' Level studies & Micro Maths users	£20.95
MICRO FRENCH - GCSE French tuition or revision course. Covers both spoken & written French	£18.95
MICRO ENGLISH - Complete self-tuition programme to GCSE level	£18.95
MICRO GERMAN - Complete self-tuition programme to GCSE level. Language Programs also suitable for business users to a high standard.	£18.95
PRIMARY MATHS - Ages 3 to 12, Complete 24 Prog. Course	£18.95
SPELL BOOK - Ages 4 to 6, Developed with the help of a Primary School Head Teacher to aid spelling skills.	£17.95
HOMEBASE - Home storage prog., Ideal for those household lists, childrens educational projects, student notes etc. Easy to use 'Push Button' controls and a extensive reference manual.	£19.95
COMPENDIUM SIX PACK - 6 Great Educational Progs. for children aged 4-12 years of age. Each is designed to keep your child's interest whilst learning.	£29.95
KIDS TYPE - Large characters & colorful graphics helps creation of stories.	
WEATHER WATCHER - Collect & analyse data using graphs etc. even animate your own weather map!	
CALENDAR QUIZ - Quiz based time related events, WORDS AND NUMBERS - Put words & sentences in the correct order or group numbers. GAME SET & MATCH - Early learning - shapes colours, numbers, coins, names & locations of British counties.	

Pen Pal v.1.3

WORD PROCESSOR/DATABASE
With Pen Pal you can mix text, 4096 colour graphics & data in ways no other w/p can! It's handling of graphics is unsurpassed: Pen Pal is the only word processor I tested that will automatically wrap text round graphics.

Amiga World, July '90

£79.95

PEN PAL complete WITH 512K Amiga RAM Expansion only...£99.95!



AMIGA SOFTWARE & ACCESSORIES

HARWOODS AMIGA PRO-GEN

NEW LOWER PRICE
Complete with FREE Multi-Cable Connecting Kit!!

PROFESSIONAL QUALITY
GENLOCK FOR COMPUTER
AND VIDEO MIXING, AT A
DOWN TO EARTH PRICE!!!

PRO-GEN with Photon Paint 2.0 **ONLY £89.95**

MOOSE SWITCH-BOX FOR PRO-GEN AND RENOAL 8802 GENLOCKS

Supplied With Genlock Extender Cable Worth £9.95
Switch-box Switches Between Foreground, Background, Video And Computer Modes.

£29.95

MUSIC-X: The ultimate software for professional MIDI sequencing. The software includes a configurable librarian and a synthesiser patch editor. All you need to recreate a song can be recalled from one performance file including sequences, MIDI routing, sync setup, keyboard maps & synthesiser or drum machine patch libraries.

MIDI INTERFACE (5 Port): In, Out, Through plus 2 switchable thru/out. Inc. 2 cables.

AMOS: AMOS allows you to access the power of the Amiga with ease. 500 different commands make AMOS a sophisticated development language. The AMOS animation language allows you to create complex animation sequences. 300 page manual and over 80 example programs **Amos Add on Modules: (BOTH require Amos prog.)**

Amos Compiler **£29.95** Amos 3D **£34.95**

SuperBase 4: Most powerful database available for the Amiga. Combines the ease of use of Superbase 2 with a versatile programming language so that you can tailor your data to your own specific needs for club/business/library records etc.

Lattice C: An ideal tool for the C programmer whether experienced or a novice. The best way to create applications for the Amiga. Fully supports Motorola chipset. Nearly 300 functions optimised to help the user write the tightest possible code. Includes screen editor. Most Amiga C books are based around lattice. (Requires either 2 floppy drives OR a hard disk drive)

Deluxe Paint IV: Paint and animation package, now including HAM mode. (1 Mb. minimum memory or more recommended)

Vidi, The Complete Colour Solution: Vidi with RGB Splitter, Frame Grabber & Digitiser. Grabs moving colour video into 16 grey scale frames (up to 16 frames in 1Mb. Amiga) and digitises from still colour video source in up to 4096 colours in less than 1 second! Requires home VCR or video camera for grabbing. Requires video camera or VCR with perfect pause for digitising. Now comes with Photon Paint 2.0 **ABSOLUTELY FREE OF CHARGE!!!**

STEREOMASTER: High quality 'stereo' sampler (best for sampling instruments etc.)

£39.95

KCS POWERBOARD IBM PC EMULATOR - Allows you to run many popular IBM PC compatible software

NEW LOW PRICES

£49.95 or just £69.95

with midi-interface

£24.95

£49.95

BUT ALL THREE AMOS PROGRAMS ARE JUST

£89.95

£229.95

£199.95

£79.95

£149.95

titles on your Amiga at Amiga A500 Plus. 1 Hercules, CGA & Monochrome Video Support. 2 Supports Both 3.5 inch & 5.25 inch Diskettes. 3 Fits into A501 RAM Slot, 8088 XT Processor, 4 Clock/Calendar included. 5 Acts As 512K RAM Exp. When in Amiga Mode. 6 Includes MS-DOS 4.01, Shell & GW-BASIC, DOS-HELP, & On-Board Memory 7 Supports A590 Hard Drive, Mouse Drive Software included. WHEN ORDERING PLEASE SPECIFY WHETHER YOUR AMIGA IS A 1.3 OR PLUS VERSION MACHINE

£189.95

KCS POWERBOARD AS ABOVE BUT WITHOUT: MS-Dos 4.01, GW-Basic, Shell,

POWER MONO SCANNER COMPLETE WITH POWER SCAN SOFTWARE

£99.95

100dpi TO 400dpi. Supports up to 64 grey shades. Throughput for prints etc. Supplied with Power Scan software, allows full screen image editing, interface mode on or off, edit true grey scale and even colour images.

SUPRAMEM RX 500 - 2Mb. to 8Mb. RAM Expansion 2Mb. RAM Vers **£199.95** 4Mb. RAM Vers **£329.95** 8Mb. RAM Vers **£549.95**
RAM expansion giving massive memory WITHOUT dismantling your Amiga, avoiding the invalidation of warranty. Easily connects to sidecar with bus 'pass-through' for HD's etc.

MIRACLE PIANO TEACHING SYSTEM - Music Keyboard to connect to your Amiga **£299.95**

Miracle is the first Piano to teach you how to play it. Whether you want help finding Middle C, or want to learn how to play Mozart, Miracles stunning Amiga Software and Midi Keyboard turns learning into FUN. Study Classical, Rock and even Jazz.

128 Built In Sounds Full sized Touch Sensitive keyboard keys Stereo Sound Get even more from your Amiga

Miracle even gives you a recording studio Versions for other computers available too, please ask for details

NAKSHA MICROSWITCHED MOUSE

£24.95

HIGH QUALITY OPTICAL MOUSE

£32.95

COMPETITION PRO JOYSTICK 5000 Black

£7.95

ZIPSTICK JOYSTICK

£11.95

COMPETITION PRO STAR JOYSTICK The ONLY joystick to obtain a 100% rating from a magazine review!

£13.95

BLANK DISKS 10 Genuine SONY 3.5" branded

Only £8.95

Only £34.95

Only £15.95

10 Unbranded with library case 3.5" certified

Only £6.95

Only £79.95

Only £9.95

3.5" DISK HEAD

£2.99

CLEANER

POSSO STORAGE BOXES

£19.95

150 piece stackable 3.5" disk storage boxes

BANK STORAGE BOXES

£11.95

80 piece lockable 3.5" disk storage boxes

**MANY MANY MORE ACCESSORIES TOO NUMEROUS TO LIST
ARE ALWAYS AVAILABLE FROM GORDON HARWOODS.
Shown here is just a selection of accessories but, if what
you want is not listed just phone us and ask!!!**

GORDON HARWOOD HARWOOD HARWOOD Computers

Enquiries & Order Line

0773 836781

Finance Facilities Available



GORDON HARWOOD COMPUTERS

DEPARTMENT 6ms / G6 NEW STREET

ALFRETON, DERBYSHIRE, DE5 7BP

TEL: 0773 836781 FAX: 0773 831040

The Closer you look The Better we look



Missing the complete set? -- well get your back issues NOW while you can



BACK ISSUES

1 SOLD OUT

- 2 Buying a paint package plus reviews of Pagestream, Colourpic, Sequencer 1, KCS Powerboard, and Scala.
- 3 Accelerating the Amiga plus reviews of Bars & Pipes, Daatascan, ATOnce, DynaCADD and BASIC languages.
- 4 Buying a printer plus reviews of Pro-24, Real 3D, Wordworth, TEX, Imagine and Superbase 4
- 5 Amiga Answers special plus reviews of Spectracolor, Superbase 4, Touch-Up, Action Replay, VideoCenter Plus and more
- 6 The most comprehensive review ever of Amiga word processors, plus the Video Toaster and a free tractals guide
- 7 SOLD OUT
- 8 A hardware and add-on buyer's guide special, tons of tips for ProfessionalPage and an in-depth look at the HAM-E colour system

ORDER NOW

...DON'T MISS OUT

ONLY
£1.75
EACH

- 9 The definitive guide to the A500 Plus, down-loading satellite images, choosing sequencers, using video and ProPage 2.
- 10 Special graphics issue featuring the Amiga's top art packages. Audition 4, Sound Enhancer and desktop video directing with Showmaker
- 11 Insight Into CDTV, a complete guide to printer preferences, 24-bit graphics, reviews of Genesis, Turbo Print and Stereo Master
- 12 Drive guide special -- all the facts and advice on hard drives, quality video output with Impact Vision-24 card, DCTV graphics and more
- 13 FREE Tracey plus special animation tutorial, test drive of Roc Tec's new hard disk, Amiga CD, Pixel 3D, Superbase. A definitive memory guide and the biggest Amiga Answers ever
- 14 Round up of best hand scanners, 5-page special on RAM boards, first in the series on Artificial Intelligence plus reviews of 3D animation packages, RayDance, Expert Draw and a preview of the new Easy AMOS
- 15 PD special -- a guide to the most indispensable PD programs and an in-depth review of PD postscript, part two of the series on Artificial Intelligence plus reviews of ImageMaster, SaxonScript, SuperJam and 23 pages of Amiga Answers
- 16 200 Top Tips of essential Amiga advice, a guide to setting up your own bulletin board, programming a neural network plus reviews of Hotlinks, Hit Kit and Professional Calc
- 17 DTP Special: the best package; high-end DTP hardware and typography tutorial. Midi sequencing, digitising and processing pictures for videos, plus reviews of Visionary and Mini Office.



.but better still, book up for the year ahead – and never miss out again!



FREE BINDER

worth £4.95

IF YOU SUBSCRIBE NOW

You get all these benefits when you subscribe:

- You save time
- You save trouble
- You guarantee your copy
- You get it delivered

Subscribe now to ensure your copy each month. For just £17.95 you will get the next 12 issues delivered direct to your home.

SAVE!
on 2-year subscription

PLUS A FREE BINDER WITH EVERY SUBSCRIPTION

Keep your copies of Amiga Shopper safe and protected right from the very start!
or free with every subscription

only **£4.95**

FILL IN THE COUPONS BELOW OR CALL OUR CREDIT CARD HOTLINE ON 0458

YES, YES, YES! I WISH TO SUBSCRIBE TO AMIGA SHOPPER

Please tick the subscription you require *12 issues*

- | | |
|---|--|
| <input type="checkbox"/> UK £17.95 | <input type="checkbox"/> EUROPE £37.95 (Airmail) |
| <input type="checkbox"/> REST OF WORLD £60.95 (Airmail) | <input type="checkbox"/> WORLD £37.95 (Surface) |

24 issues

- | | |
|--|--|
| <input type="checkbox"/> UK £33.95 | <input type="checkbox"/> EUROPE £69.95 (Airmail) |
| <input type="checkbox"/> REST OF WORLD £109.95 (Airmail) | <input type="checkbox"/> WORLD £69.95 (Surface) |

Total amount payable £

NAME

TELEPHONE NO

ADDRESS

POSTCODE

METHOD OF PAYMENT *please tick*

- ☐ VISA/ACCESS ☐ CHEQUE

CARD NO

EXPIRY DATE

AS/MAG/10

Please make cheques payable to FUTURE PUBLISHING LTD and send together with this form in an envelope to the following address:

AMIGA SHOPPER, FREEPOST, SOMERTON TA11 7BR

YES, YES, YES! I WISH TO PURCHASE THE FOLLOWING BACK ISSUES OF AMIGA SHOPPER AND/OR BINDER

Please tick the issues you require

- BACK ISSUES £1.75 EACH ☐ 2 ☐ 3 ☐ 4 ☐ 5 ☐ 6 ☐ 8 ☐ 9
☐ 10 ☐ 11 ☐ 12 ☐ 13 ☐ 14 ☐ 15

- ☐ BINDER £4.95

Total amount payable £

NAME

TELEPHONE NO

ADDRESS

POST CODE

METHOD OF PAYMENT *please tick*

- ☐ VISA/ACCESS ☐ CHEQUE

CARD NO

EXPIRY DATE

Please make cheques payable to FUTURE PUBLISHING LTD and send together with this form in an envelope to the following address:

AMIGA SHOPPER, FREEPOST, SOMERTON TA11 7BR

Turn your Amiga into the ultimate Hi-Tech workstation environment, only £34.99

NEW PROMOTION
8833 Mk II Monitor Genuine UK
Model Now with Turbo Challenge II
Promotion. Only £199 inc VAT



CLEARANCE SALE
EX DEMO A590's £199
EX DEMO A500's £199

AS PROMISED
LAST MONTH
A600'S DROPPED
PRICE. YOU KNOW YOU
CAN TRUST IN DIAMOND

DIAMOND

COMPUTER SYSTEMS LTD

REMEMBER, BUYING THROUGH DIAMOND YOU KNOW YOUR SAFE, WE'LL STILL BE HERE NEXT WEEK

1Mb RAM **PACK** **1Mb RAM**

THE FANTASTIC NEW AMIGA 600

With 3 Top Games & Joystick
CARV-UP: Drive your car around this exciting platform games in search for Captain Grim
CADAVER: Explore Castle Wolfe & battle your way through to the ultimate fight with the Necromancer.
CORPORATION: Makes RoboCop look like a girlie
only £299 inc vat

Or with 8833 Mk II Monitor
+Turbo Challenge II Promotion
Includes connecting lead
only £499 inc vat

WITH FREE HOME MAINTENANCE
Free Deluxe Paint III + game
while stocks last
Add \$49.95 for 1Mb extra RAM
we cannot be beaten on price

1Mb RAM **PACK** **1Mb RAM**

THE EVEN MORE FANTASTIC NEW AMIGA 600

WITH SPECIAL HARD DISK DEALS FROM
CAPTAIN DIAMOND
20Mb only **\$399 inc vat**
60Mb only **\$499 inc vat**
80Mb only **\$539 inc vat**
120Mb only **\$599 inc vat**
Packs include FREE D Paint 3 & Game

Or with 8833 Mk II Monitor
+Turbo Challenge II Promotion
Includes connecting lead
ADD \$200 inc vat

WITH FREE HOME MAINTENANCE
Add \$49.95 for 1Mb extra RAM
If you already have a 600 & want to increase your Hard Disk see next page
Hard Disk repairs are 12 months return to base

1Mb RAM **PACK** **1Mb RAM**

THE DIRTY DOZEN PACK NEW AMIGA 600 +12 GAMES

Line Of Fire, CarVup, Teenage Mutant Hero Turtles, Cadaver, Corporation, Shufflepuck Café, Emotion, Powerplay, Grand Monster Slam, Monty Python, Mike Read's Pop Quiz, Tower Of Babel
+ All AMIGA standard features, Mouse etc.
+ Mousemat, Tailormade Dust Cover Joystick, 10x3.5" disks, 1 disk storage box.
WITH FREE MAINTENANCE

only \$349 inc vat
Or with 8833 Mk II Monitor
+Turbo Challenge II Promotion
only \$549 inc vat

we cannot be beaten on price

1Mb RAM **PACK** **1Mb RAM**

600 WORD PRO PACK NEW AMIGA 600

And 9 Pin Seikosha Printer
+ Text Engine, Flexibase Ledger
Amiga Cash, Amigo Fox (DTP) & Chequebook Accountant + All AMIGA standard features, Mouse etc.
WITH FREE HOME MAINTENANCE
only \$399.95 inc vat

Or with 8833 Mk II Monitor
+Turbo Challenge II Promotion
only \$599.95 inc vat

ADD \$75 FOR COLOUR PRINTER
ADD \$80 FOR QUALITY 24 PIN PRINTER
we cannot be beaten on price

THE ALL NEW EVERYTHING BUT THE KITCHEN SINK PACK
AN A600 & ALL THIS FOR ONLY £349.95
& WE WILL EVEN CHUCK IN A JOYSTICK,

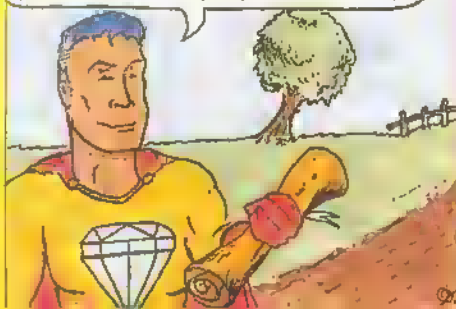
DIAMOND GIVES YOU MORE BECAUSE WE LOVE OUR CUSTOMERS

Games:1 Cubba Peterquest Rothello Scudbuster The Gallows	Games:4 Cheat Sheet Chess Tutor Figs Zon	Games:7 Rally II Battle Force	Games:8 Trek	Games:9 Amosmind Landmine Landscape LVD Sub Attack	Games:10 Cute Stuff Cycles Gravity Ware Rot Shanghai	Games:5 Amto Mega How Paragon	Animation:11 Armywalker Coyote	Animation:12 Animas Pogo	Animation:13 Aeroboons Tugite	Animation:14 Atmosphere Shuttlecock	Puzzles:15 Puzz Rubik Word Puzzle Word Search	Dos Utilities:16 Dos Manager Sid Tool Manager	Virus:17 Mem Check No Virus Virus Checker Virus Control Virus Utility Virus Zero Virus	Laser:18 Amidock Common Post	Word Pro:19 Super Spell Text Plus Typing Tutor U Edit	Copiers:20 Flash Copy Free Copy Paul Copy P Copy Super Dupes	Sound:21 Multi Player Octamed	Printer:22 Com Disk Print Print Studio	Databases:23 Addresser Ami Check D Base II Data Easy	Picture:24 Star Trek 1 IFF Star Trek 2 IFF Star Trek 3 IFF Judge Dredd King of IFF Nymphs 1 Nymphs 2 Ted Pot Two ships IFF	Picture:25 Fashion Girls Leopard Nymph 83 Nymph 84 Nymph 85 Pic Base Squirrel	Term & Mod:26 Term	Term & Mod:27 NComen	PP Utils:28 PPAnim PPJue PPMore PPShow PP Type Tools Deamon	Archives:29 UH Warp P-Compress P-Reader P-Writer	Asorted:30 Mighty Mouse Pchase Thea Package
---	--	-------------------------------------	-----------------	---	---	--	--------------------------------------	--------------------------------	-------------------------------------	---	---	--	---	---------------------------------------	---	---	-------------------------------------	---	--	---	---	-----------------------	-------------------------	---	--	--

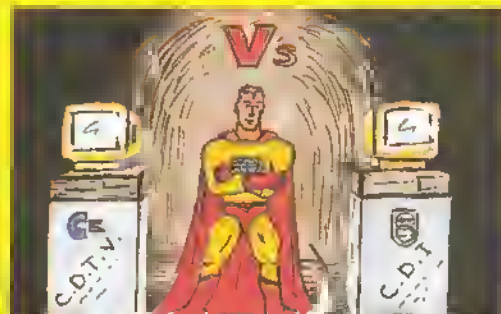
The NEW Adventures Of CAPTAIN DIAMOND

Due to constant ROM variations this software is subject to change.

AS THE KEEPER OF THE DIAMOND PLEDGE, I FEEL IT IS NOT ONLY MY DUTY TO GUARANTEE YOU THE BEST PRICES, BUT ALSO TO SUPPLY YOU WITH THE NEWS AND INFORMATION THAT YOU WANT



YOU MAY HAVE READ RECENTLY IN YOUR MAGS OUR ADVERT REFERRING TO CDTV AND CD.I. WELL, JUDGING BY ALL THE LETTERS SENT IN, THE QUESTION EVERYONE IS ASKING IS....
"WHICH IS BEST?"



WELL, THERE IS ONLY ONE WAY TO ANSWER THAT QUESTION, LET THE PUBLIC DECIDE. LET'S PUT THE TWO SYSTEMS SIDE BY SIDE AND ASK....
"WHAT DO YOU THINK?"

**HITACHI
CCTV CAMERA
ONLY 129.95**

**WANT A 1500
With Workbench 2.04?
GOT A 500
SWAP IT FOR ONLY £399.95
ALL PRICES INCLUDE VAT**



WARNING

Not reading this carefully could seriously damage your wealth.
Big price increases are imminent, buy now & save pounds before Christmas.
Large manufacturers reduced their prices over the quiet Summer, some even lost money, but
PRICES ARE GOING UP SOON.

CAPTAIN DIAMOND'S 1500 & 3000 CENTRE

A1500 NEW VERSION

All Diamond's 1500's come with Workbench 2.04 and are also supplied with:- Deluxe Paint III, Home Accounts, The Works (Word Processor, Spreadsheet and Database), 3 Games (Puzznic, Toki & Elf), and a book (Get The Best Out Of Your Amiga).

A1500 on its own **£529**
with GVP 8Mb bare board + 52Mb Quantum **£819**
with 8Mb Ok RAM board + 105Mb Quantum **£978**
A1500 + 8833 **£729**

A1500 Deluxe Includes
1.3 ROM / 2.04 ROM & Switcher **£589**

THE NEW COMMODORE AMIGA 3000

25MHz processor, 100 Mb hard disk,
4Mb Fast RAM, 2Mb RAM.
£1995.00 INC VAT
Phone for PX pricing

GRAPHICS & VIDEO

GVP Impact Vision 24 Bit Card (1500/2000/3000) from **£1550**
DCTV (Pal Version) **£440.00**
Rocgen **£89.95**
Rocgen + **£124.95**
Rendale 8802 **£119.95**
Rendale 8806 RGB **£499.00**
Commodore 2300 Int **£499.00**
G2 **£575.00**
G2+ **£999.00**
Video Pilot V330 **£999.00**
Philips Editing System **£399.00**

Out Of Memory?

8Mb RAM Board for A1500 or 2000 **£79.95**
Avies Board DMb **£79.95**
For each 2Mb RAM add **£69.00**

DISK DRIVES

AMIGA Internal **£49.95**
Slimline **£49.95**
Ultra slim **£64.95**
CDTV drive **£64.95**
NEW Rocille Slimline with no click & Virus protection on track 0. **£59.95**

GENERAL ACCESSORIES

ROCHARD 40Mb EMULATORS

New Commodore 386-20 **£439.99**
The new GVP 16MHz PC-286 **£239.99**
Vortex AT Once Plus 16MHz **£214.99**

MICE

Naksha Upgrade Mouse **£22.95**
New Raboshiffi, Auto sensing Joystick/Mouse switch box **£13.95**

MEMORY UPGRADES

A500 Plus 1Mb Expansion **£39.95**
New A600 1Mb Expansion **£54.95**
Supra 500RX 2Mb Expansion **£139.95**
512K RAM Expansion + Clock **£24.95**
Above without clock **£19.95**
1.5Mb Mb Expansion (Not Plus) **£79.95**
1 Mb Expansion **£39.95**
1Mb Expansion with Thru-Port **£49.95**

INTERNAL DRIVE KIT

Replacement A500 Internal 3.5" drive kit, fully compatible with 1Mb unformatted capacity. Comes with easy to follow guide **£49.95**

A500 ROM SWITCHER

Switching between versions of Kickstart on your A500 is could not be easier than with our new ROM switcher. **£19.95**
Kickstart 1.3 ROM (Supplied separately) **£29.95**
Kickstart 2.4 ROM (Supplied separately) **£39.95**

TRACKBALL

One hand control unit, after using this you will never want a mouse again **£29.95**

POWER SUPPLY

Genuine Commodore A500 PSU with the switch mode **£39.95**

SOUND EXTRAS

Amiga Sound Enhancer **£35.99**
Stereo Speakers **£39.95**

CONTROL CENTRE

Turn your Amiga into the ultimate hi-tech integrated workstation environment **£34.99**

MONITORS & TV'S

8833Mkl + Turbo Challenge II promotion **£199**
CBM 1960 Monitor **£449.95**
CBM Flicker Fixer **£299.95**
Panasonic 1381 multisync **£275**
Philips TV/Monitor **£249**
Philips 3350 51" remote control **£349.99**
Philips 86cm matchline **£2499.99**
100Hz widescreen **£279**
New Philips Designer cube TV/Monitor **£159**
Goldstar TV/Monitor **£229.95**
Philips 14" SVGA monitor, suitable for use with A3000 or 1500 with flicker fixer **£229.95**
Please add **£14.95** for connecting lead
NEW CDI FROM PHILIPS £599

GVP HARD DRIVES / ACCELERATORS

AMIGA 1500 / 200 HARD DRIVE

Impact Series II HC8+ Control Carrd only **£134.99**
Impact Series II HC8+ & 52Mb Hard drive **£279.99**
Impact Series II HC8+ & 120 Mb Hard drive **£419.99**
Impact Series II HC8+ & 240Mb Hard drive **£639.99**
Impact Series II HC8+ & 420Mb Hard drive **£1169.99**

AMIGA 1500 / 2000 ACCELERATOR CARDS

G-Force 030-25MHz with 1Mb 32-Bit RAM **£549.99**
G-Force 030-40MHz with 4Mb 32-Bit RAM **£899.99**
G-Force 030-50MHz with 4Mb 32-Bit RAM **£1269.99**
G-Force 040-28MHz with 2Mb 32-Bit RAM **£1699.99**

AMIGA A500 HARD DRIVES

GVP Series II HD+ 52MB **£354.99**
GVP Series II HD+ 105MB **£469.99**
GVP Series II HD+ 240MB **£734.99**

GVP COMBO ACCELERATOR SERIES

FOR THE AMIGA A500

A530 Combo 40MHz + 52Mb H/D **£699.99**
A530 Combo 40MHz + 52Mb H/D **£849.99**
A530 Combo 40MHz + 52Mb H/D **£1039.99**
68882 Co-Processor for A530 **£234.99**

GVP MEMORY RAM MODULES

Series II RAM 8 RAM Card for Amiga 1500/200 with 2Mb **£149.99**
32 bit 60ns 1Mb SIMM for Accelerator Cards **£64.99**
32 bit 60ns 4Mb SIMM as above **£179.99**

COMPONENT SHOP

QUANTUM H/DISKS **10E** **SCSI**
52Mb **£169.95** **£179.95**
105Mb **£269.95** **£279.95**
2 year warranty

SYQUEST DRIVE

Removable cart. 44Mb 28ms **£299.00**
CONTROLLER for above add **£69.95**

ROM Switcher Now Available

1.3 - 2.04 ROM Switcher **£9.95**
1.3 ROM available @ **£29.95**
2.04 ROM available @ **£39.95**

* PX Offer on page 1. Must be in good working condition with 1Mb RAM. Judgement of condition subject to managers discretion

CAPTAIN'S CHIP SHOP

4X256K DRAMS **£3.50**
For A590's etc **£3.50**
1X1MB DRAMS For 8up/Supra **£3.50**
1x9MBSIMMS **£34.99**
For NEXUS/GVP/Rochard **£159.95**
4x9Mb SIMMS For GVP etc

AVIDIO 24

24-bit graphics for the A500. 768x580 quality resolution. 16.8million colour frame buffer. Small easy to fit circuit board. Fully genclockable. Runs on standard A50 (1Mb chip RAM). With 24-bit paint package (TV Paint). Allows picture in picture **£589**

REMBRANDT

24-bit colour. 16million colours. Fits both A1500/2000 **£1490**

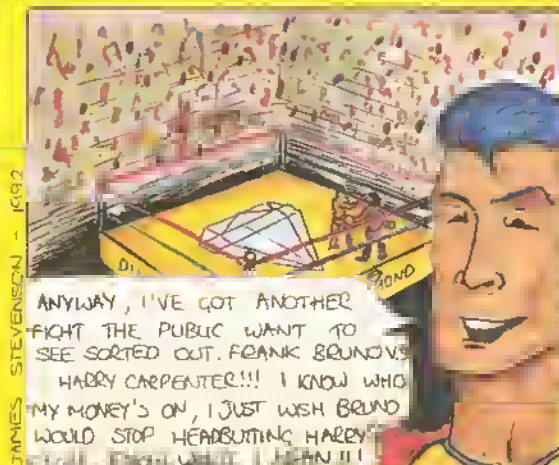
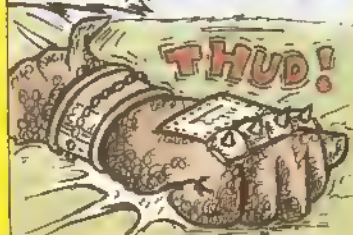
CAPTAIN DIAMOND'S ULTIMATE A600 HARD DISK OFFER

A600 Upgrade Hard Disks

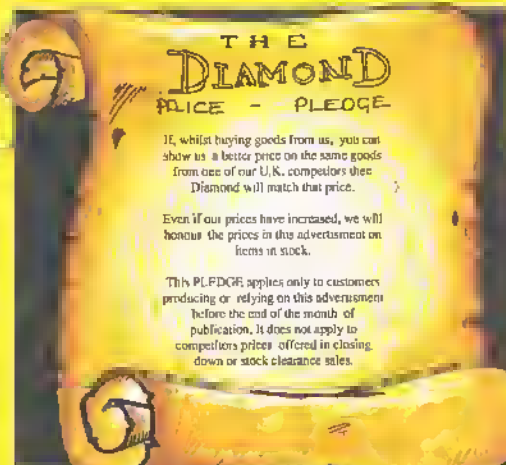
20Mb (limited stock) **£149.95**
60Mb **£199.95**
80Mb **£249.95**
120Mb **£299.95**

Turn your A600 with a single floppy drive into the ultimate machine with a Hard Disk. 12 months return to base. Only **£29.95** for fitting by one of our qualified engineers.

YES, I'M THROWING DOWN THE GAUNTLET TO BOTH COMMODORE AND PHILIPS GIVE THE PUBLIC WHAT THEY WANT. TO JUDGE THE COMPETITION I SUGGEST THAT IT IS OVERSEEN BY AT



ANYWAY, I'VE GOT ANOTHER FIGHT THE PUBLIC WANT TO SEE SORTED OUT. FRANK BRONOV'S HARRY CARPENTER!!! I KNOW WHO MY MONEY'S ON, I JUST WISH BRONOV WOULD STOP HEADBUTTING HARRY



THE DIAMOND PRICE - PLEDGE

If, whilst buying goods from us, you can show us a better price on the same goods from one of our U.K. competitors then Diamond will match that price.

Even if our prices have increased, we will honour the prices in this advertisement on items in stock.

This PLEDGE applies only to customers producing or relying on this advertisement before the end of the month of publication. It does not apply to competitors' prices offered in closing down or stock clearance sales.

MUSIC X
£44.95

P/X your old 500
for a new Amigo 1500
with Workbench 2.04
for only £399.95
ALL PRICES INCLUDE VAT



Part exchange ex demo
A500 with 3 months warranty,
£199.95
Ex demo A590's from £199.95
ALL PRICES INCLUDE VAT

DISK
ONLY
40p EACH

CAPTAIN DIAMOND'S PERIPHERALS PAGE

Printer Driver Disk for your Amiga, £5.00 (Please specify model)

APPLICATION

SOFTWARE

Graphics & Digitising

Deluxe Paint IV	£59.99
Digi view Media Station	£119
Intro CAD Plus	£64.99
X CAD 2000	£89.99
X CAD 3000	£239.99
Image Master	£106.99
Image Finder	£39.95
Vista	£64.99
Pro Vista	£64.99
VDI Amiga Colour Solution	£99.00
Pro Draw 3	£89.95

Music, Midi & Sound

Audio Engineer +2	£189
Audiomaster 4	£44.99
Bars & Pipes Pro	£174.99
Dr T Copiest Apprentice	£69.99
Dr T KC5 Level II V3.5	£179.95
Music X 1.1	£44.95
Stereo Master	£29.95
Pro Midi 2 Interface	£19.99
Techno Sound Turbo	£34.99

Video Titling

Amiga Vision	£49.99
Big Alternative Scroller	£39.95
Broadcast Titrer 2	£174.99
Font Pack 1 for above	£74.99
Font Pack 2 for above	£74.99
Pro Video Post	£174.99
TV Show	£49.99
TV Show Pro	£59.99
TV Text Pro	£69.95
Video Director	£99.00
Can Do V1.6	£74.99
Show Maker	£149.00
Scala 500	£69.99
Scala Pro	£175.00

Animation & Rendering

Art Dept.	£44.99
Art Dept Pra 2	£119.95
Imagine 2	£174.99
Map Master for Imagine	£44.99
Presentation Master	£169.95
Surface Master for Imagine	£24.99
Real 3D Beginners	£84.99
Real 3D Pro	£229.95
Sculpt Animate 4D	£199.95

CLUB MEMBERS PRICE ONLY

(Prices are already discounted)

Wordprocessing & DTP

Transwrite	£29.99
Kindwords 3	£34.99
Pen Pal	£44.99
Wordsworth V1.1	£79.95
Excellence 3	£79.95
Home Office Kit	£49.95
Pagesetter 2	£39.99
Page Stream 2.2	£129.95
Saxon Publisher	£159.95
Propage 3	£139.95

Development & Utilities

AMOS Starter Pack	£39.95
Easy AMOS	£24.99
AMOS 3D	£29.99
AMOS Compiler	£24.99
Cross Dos	£34.99
Dos 2 Dos	£24.99
Disk Master	£34.99
Dev Pack 3	£49.95
Directory Opus	£24.99
Lattice C.S.1 Dev Syst	£159.95
Quarter Back VS	£34.99
Superbase Pro 4	£149.95
X Copy Pro S.2	£29.95
Hi Speed Pascal	£69.95
Hyper Book	£39.99

Accounting

Home Accounts 2	£34.99
System 3	£39.99
Area Accounts	£89.99
Pro Calc	£99.99
Advantage	£34.99
Day By Day	£24.99

Educational

A D I Maths 11-12	£19.95
A D I Maths 12-13	£19.95
A D I English 11-12	£19.95
A D I English 12-13	£19.95
Distant Suns 4	£49.95
Fun School's (Each)	£19.95
GB Route	£49.95

APPLICATION STAR BUYS

Pen Pal	£44.99
Wordsworth 1.1	£79.95
Home Office Kit - Includes Spreadsheet, Database & Word Processor	£49.95

DOT MATRIX PRINTERS

STAR LC20	£133.77	CITIZEN SWIFT 224	£204.95
STAR LC 200	£194.94	CITIZEN SWIFT 224 COL	£222.30
STAR LC 24/200 COL	£237.77	CITIZEN SWIFT 24E COL	£254.95
STAR XB 24 200 COL	£388.92	CITIZEN SWIFT 24X	£379.95
STAR XB 24 250 COL	£466.47	SEIKOSHA SP 1900+	£109.95
CITIZEN 124/D	£115.95	SEIKOSHA 24 PIN SL90	£175.07
CITIZEN SWIFT 9	£174.95	PANASONIC KXP 1123	£175.07
CITIZEN SWIFT 9 COL	£184.95	NEW PANASONIC	
CITIZEN SWIFT 9X	£249.95	2180 COLOUR PRINTER	£199.95

INK JET PRINTERS

HP PAINTJET	£694.95
HP DESKJET	£364.95
HP DESKJET COL	£539.95
STAR SJ48	£232.65
CANON BJ10EX	£224.95
CANON BJ300	£359.95
CANON BJ330	£499.95

LASER PRINTERS

Oki 400	£527.57
NEW Oki OL410 1Mb	
inc. HP IIIp Emulation	£703.83
Oki LASER 810	£1098.62
Oki LASER 830	
Postscript 2Mb	£1284.27
Oki LASER 840	
Postscript 2Mb	£1491.07

AMIGA BOOKS

Advanced S. Prog. Guide	£24.45	Disk Drives Inside & Out	£20.95
3D Graphics Prog. Basic	£13.95	Amiga For Beginners	£12.95
Amiga Basic Inside & Out	£17.45	Graphics Inside & Out	£24.45
Amiga C Advanced Prog.	£24.45	Machline Language	£13.95
Amiga C for Beginners	£13.95	Printers Inside & Out	£24.45
Amiga DOS Inside & Out	£13.95	Systems Prog. Guide	£24.45
Amiga Dos Quick Ref.	£6.95	Secrets of Amiga 1.1	£14.95
Desk Top Video Guide	£13.95	Making Music On Amiga	£24.45

TOP 10 TITLES

Sensible Soccer	£19.49
Secret Monkey Island II	£28.49
Myth	£19.49
Civilisation	£26.24
Striker	£19.49
Hook (1Mb)	£19.49
Fire & Ice	£19.49
Championship Tennis	£18.74
Lure Of The Temptress	£23.24
Push Over	£19.49

CLUB MEMBER PRICE ONLY

Why don't you join
Captain Diamond's
Discount Club and save a
fortune on all your games
Personal callers only
Normal saving off RRP

25%

AMIGA BUDGET TITLES

E-Motion, Dungeon Quest, Shufflepuck Cafe, Tower of Babel,
Dafu Storm, Grand Monster Slam, Powerplay, Soccer, Kid Gloves,
Predator 2, Corv-Up, Corporation, Codaver, Line of Fire,
Teenage Mutant Ninja Turtles, Back to the Future III, Gunship,
Mike Read's Pop Quiz, Gazza II, Monty Pythons Flying Circus.

Any 3 of these titles for only £10, while stocks last

DIAMOND SHOPS AROUND THE UK

232 Tottenham Ct Rd
London W1
Tel 071 580 4355
FAX 071580 4399

104S High Road
Chadwell Heath
Romford
Tel 081 597 8851
FAX 081 590 8959

144 Ferry Road
Edinburgh
Tel 031 554 3557
FAX 031 554 2115

443 Gloucester Rd
Bristol
Tel 0272 522044
FAX 0272 521738

1022 Stockport Rd
Manchester
Tel 061 257 3999
FAX 061 257 3997

406 Ashley Road
Poole Dorset
Tel 0202 716226
FAX 0202 716160

HEAD OFFICE
84 Lodge Road
Southampton
Tel 0703 232777
FAX 0703 232 679

UK CORPORATE
SALES OFFICE
TEL 0703 333184
or 0703 336277
FAX 0703 232679
CONTACT SHARON,
DAWN/BARBARA
EDUCATION/
GOVERNMENT

LONDON CORPORATE SALES
Saran Duffy 071 5804355 Fax 071 580 4399

14 DAYS ADD 2%,
30 DAYS ADD 5%

HOW TO ORDER

Simply telephone through your order, giving your Access or Visa card
number, or send a cheque or postal order to your local shop.
MAIL ORDER Phone 071 580 4355. Prices include VAT unless otherwise stated.
Minimum Courier Service £23.50. (Corporate Sales, any order under £250
subject to £10.00 Admin charge) Allow 10 working days for cheque
clearance. Bankers drafts clear same day. All prices are correct at time of
going to press but are only valid until the 10th day of month of publication
due to magazines coming out four weeks earlier than issue cover date.

THE DIAMOND PRICE PLEDGE

If, whilst buying goods from us, you can show us a better price for the same
goods in stock with one of our UK competitors then we will match it.

Even if our prices have increased we will honour the price in this
advertisement on items in stock as long as you bring this advert with you.

This pledge applies only to customers relying on this advertisement before
the end of the month of publication. It does not apply to competitors
prices offered in closing down or stock clearance sales.

* * * * *

Price Busters!!

Graphics & General

* AntiA	24.99
* Art Department Pro 2	139.99
* Baby	9.99
* Big Alternative Scroller	34.99
* Broadcast Titrer 2	154.99
* Deluxe Paint 4.1	54.99
* Charts & Graphs	
* NEW!	59.99
* Expert Draw	49.99
* Expert 4D Jr	39.99
* Font Grabber	29.99
* Hotlinks	49.99
* Imagine 2.0	189.99
* Mediastation	119.99
* Maxiplan 4.0	39.99
* Personal Finance	
* Manager Plus	19.99
* Personal Font Maker	34.99
* Professional Calc	99.99
* ProDraw 3.0 - NEW!	89.99
* Real 3D Beginners	99.99
* Scala	179.99
* Scala 500	64.99
* Take 2	34.99
* Video Director	99.99
* Vidi Amiga 12	84.99
* Vista Pro 2	49.99
* XCAD 2000 - NEW!	99.99
* XCAD 3000 - NEW!	299.99

Educational

* Compendium 6	24.99
* Distant Suns 4.1	39.99
* Fun School 4 Series	15.99
* GB Route Plus	54.99
* Micro Series	16.99
* Tekno Amiga	64.99

Development & Utilities

* AMOS	29.99
* AMOS 3D	22.99
* AMOS Compiler	19.99
* Cross Dos 5.0	24.99
* Easy AMOS	22.99
* Anim Fonts 1, 2 & 3	29.99
* Blitz Basic	49.99
* Can Do V1.6	64.99
* Dev Pac 3.0	49.99
* Directory Opus	25.99
* Diskmaster	32.99
* HiSpeed Pascal	64.99

* **Post & Packing £1.50 - Securicor £5** *
48 hour despatch (cheques 7 days)

* **Cheques should be made payable to Softstore** *
Access and VISA cards accepted

* **Softstore, 410 Bath Road, Slough SL1 6JA** *

* **0628 - 668320** *
* **CALLERS WELCOME** *

* * * * *

Home Accounts 2	36.99
Quarterback 5.0	39.99
Quarterback Tools	44.99
Turbo Print Pro 2.0	39.99

Hardware

Kick Back with 1.3 ROM	44.99
Colourburst	299.99
512K RAM with clock	29.99
1.5Mb RAM with clock	82.99
Invision Plus/Live	449.99
Naksha Mouse	22.99
Optical Mouse	29.99
Rendale 8802 inc	
Ext Cable	149.99
RocGen Genlock	84.99
RocGen Plus	129.99
RocLite Drive	54.99
RockKey - NEW!	249.99
Podscat Graphics	
Tablet	189.99
Touch Screen	
for Amiga	229.99
3 Button Track Ball	34.99
Zydec Trackball	29.99
Zydec Amiga Drive	49.99
Zydec A500	
1Mb RAM Card	44.99
Zydec A600	
1Mb RAM Card	49.99
Zydec Hand Scanner	119.99

Music & Sound

AD1012/Studio 16	
Card	399.99
Audio Engineer Plus 2	149.99
Audition 4	34.99
Deluxe Music Const.	
Set	49.99
Megamix Master	29.99
Music X 1.1	59.95
Perfect Sound	39.99
Pro Midi Interface	19.99
Stereo Master	29.99
Techno Sound Turbo	29.99

DTP & Wordprocessing

Excellence 3.0	59.99
Page Setter 2	34.99
Page Stream 2.2	129.99
Pen Pal	49.99
Protext V5.5	99.99
Professional Page 3.0	129.99
Scribble	22.99
Transwrite	29.99
Wordworth 1.1	79.99
Works Platinum	39.99

WIN! A day out with a top pro football photographer

SEPTEMBER 1992 £1.95

PHOTOPLUS

TESTS, TIPS AND TECHNIQUES - TO MAKE YOU A PHOTO EXPERT

MOUNTAIN PHOTOGRAPHY

FIND OUT HOW THE EXPERTS GET GREAT PICTURES UNDER EXTREME CONDITIONS

THIS SHOT TOOK 11 DAYS

FOR THE FULL STORY - PAGE 9

TEST: New generation bridge cameras from Olympus and Canon. How do they measure up?

TIPS: Better Buildings. All you need to know to shoot architecture

TECHNIQUES: Photo Impressionism. Move over Monet - how to get results like this!

FREE GIFT: With every copy Photographer's sundial

OUT NOW: Another magazine from the people who brought you Amiga Shopper.

CAMERA TEST: Head to head - Olympus' IS-2000 and Canon's new Epoca 135.

EXPERT TIPS: How to shoot soccer action. PLUS How the mountain experts get great pictures under extreme conditions.

TOP TECHNIQUES: How to get the best from natural light. Everything you need to know to make the most of your exclusive tree sundial!

FREE GIFT: Save money too! Why don't you take out a subscription?

John Hedgecoe's Practical Landscape Photography

SELLS FOR £14.99: Your FREE GIFT when you subscribe, Practical Landscape Photography by John Hedgecoe offers over 200 pages of practical advice and is crammed with 350 stunning photos.

Subscription price is only £21.40 Save £2.00 on shop price

YES I wish to subscribe to Photo Plus at the special price of £21.40. Issue 8 is illustrated here; please start my subscription with Photo Plus Issue Number..... Code As1

Credit Card ☐ Cheque ☐ (make payable to Future Publishing Ltd)

Name

Signature

Address

Post Code..... Tel No.....

Visa/Access Card No

☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐

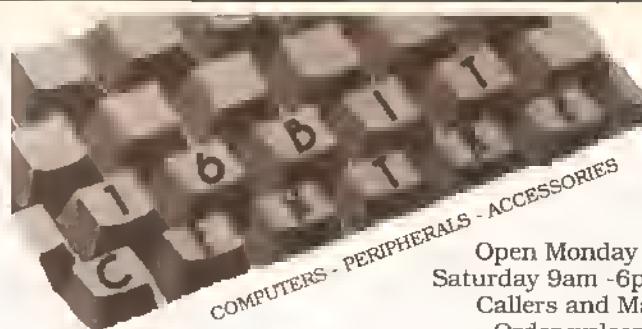
Expires ☐ ☐ ☐ ☐

Please return to:

Photo Plus Subscriptions, FREEPOST, Somerton, TA11 6TB

**COMMODORE
1085S STEREO
MONITOR**
Including FREE lead
ONLY £209.00

**PHILIPS 8833 MK II
STEREO MONITOR**
Including Free Lead
ONLY £209.00



COMPUTERS - PERIPHERALS - ACCESSORIES

Open Monday to
Saturday 9am -6pm
Callers and Mail
Order welcome
Easy parking

**KCS POWERBOARD
PC Emulator
For Amiga A500**

ONLY £179.00

**AT-ONCE AMIGA
PC 286 AT EMULATOR
FOR A500
ONLY £159.00**

HARD DRIVES

A600 Now in £325, A600 Classics £340,
A600 HD £459, A600 HD Classics £475

**GVP SERIES II
1500/2000**
52Mb Quantum
Space for 8Mb RAM
£269.00

**GVP SERIES II
1500/2000**
120Mb Drive
Space for 8Mb RAM
£389.00

**GVP SERIES II
1500/2000**
120Mb Quantum
Space for 8Mb RAM
£409.00

**GVP SERIES II
A500**
52Mb Quantum
Space for 8Mb RAM
£339.00

**GVP SERIES II
A500**
105Mb Quantum
Space for 8Mb RAM
£429.00

**GVP SERIES II
A500**
120Mb Quantum
Space for 8Mb RAM
£455.00

AMIGA A500 FUN PACK

Amiga A500 Plus, Mouse, Modulator, Manuals, Workbench, Joystick, Disk Box,
10 Disks, Dust Cover, Dpaint III, 1Mb RAM, PLUS 13 GAMES
Lemmings, Simpsons, Captain Planet, Safari Guns, Bubble Ghost, Tin Tin, Purple
Saturn Day, Jumping Jackson, Hostages, Bobo, Krypton Egg, Shuffle Puck Cafe,

ONLY £399.00 inc VAT

KICK OFF 2
£9.50

**HOME
ACCOUNTS**
£9.95

IVS TRUMP FOR A500
With space for 8Mb of RAM
52 MEGS£309
120 MEGS£425

A500 CARTOON CLASSICSOnly £319.00

SOFTWARE

DELUXE PAINT II.....	£4.35	X CAD 2000.....	£95.00
AMOS + EXTRAS DISK.....	£32.00	QUARTERBACK V6.....	£39.00
BROADCAST TITLER II.....	£139.00	PRO-WRITE V3.2.....	£69.00
HOT LINKS.....	£49.00	X CAD 3D.....	£159.00
DIGIVIEW MEDIA STATION.....	£109.00	PHOTON PAINT 2.....	£25.00
LATTICE C V5.10.....	£149.00	FINAL COPY.....	£45.00
PAGESETTER V2.....	£42.00	VIDEO EFFECTS 3D.....	£99.00
PAGESTREAM V2.2.....	£125.00	DOS 2 DOS.....	£28.00
PAGESTREAM FONTS PACK.....	£49.00	O/BACK TOOLS.....	£42.00
X CAD 3000.....	£249.00	WORDWORTH.....	£72.00
CROSS DOS.....	£19.00	SUPERJAM.....	£85.00
SCENERY ANIMATOR.....	£53.00	REAL 3D BEGINNERS.....	£99.00
TURBO PRINT PROFESSIONAL.....			£38.00
PEN PAL, Excellent easy to use word processor.....			£53.00
IMAGINE 3D V2.0 Animations & ray-tracing.....			£179.00
ART DEPARTMENT PROFESSIONAL V2.05.....			£119.00
DIRECTORY OPUS.....			£29.95
VIDEO EASE, Video titling package.....			£35.00
BARS + PIPES PROFESSIONAL.....			£189.00
AMOS COMPILER, Compile your Amos programs.....			£23.00
THE WORKS PLATINUM, integrated package.....			£39.00
PRESENTATION MASTER.....			£159.00
VISIONARY Adventure creation language.....			£53.00
WALT DISNEY ANIMATION STUDIO.....			£54.00
REAL 3D TURBO/PROFESSIONAL.....			£269.00
PROFESSIONAL PAGE V2.1 with tutorial video.....			£115.00
PROFESSIONAL PAGE V3.0 New Version.....			£129.00

AMIGA A1500

The A1500 inc. Philips or CBM 1084s or 5 monitor, Twin drives, Dpaint3,
The Works Platinum, Home Accounts, 3 Games + Joystick
ONLY £739.00

AMIGA A500 part exchange available - please phone

ACCELERATORS

Microbotics Accelerator VXL-30, 25MHz.....	£222.00
Microbotics Accelerator VXL-30, 40MHz.....	£351.00
Speed Merchant Doubles Amiga Speed.....	£149.00
GVP 68030 25MHZ WITH 1 MEG RAM.....	£545.00
GVP 68030 40MHZ WITH 4 MEGS RAM.....	£869.00
GVP 68030 50MHZ WITH 4 MEGS RAM.....	£1279.00

HOW TO ORDER:
Either call our number
below with your credit
card details, or send
cheque/PO or credit
card details to our
address. Cheques made
payable to
THE 16 BIT CENTRE
Prices subject to change without
notification.

All prices include VAT and Courier Service

16 BIT CENTRE

Units 15-17,

Lancashire Fittings Science Village

Claro Road, Harrogate HG1 4AF

Tel (0423) 531822/526322

HARDWARE

386/20 AT Bridgeboard For 1500/2000.....	£425.00
ROM V2.04 AND ECS DENISE NOW IN STOCK.....	each £29.00
ROM V2.04 Upgrade Kit.....	£85.00
DCTV 24 bit colour graphics.....	£419.00
ROGGEN PLUS GENLOCK.....	£125.00
GVP PC EMULATOR (for GVP A500 hard drives) 16Mhz.....	£222.00
AMIGA COMPATIBLE DISK DRIVE on/off & through port.....	£57.50
OTEC MOUSE high quality replacement mouse.....	£22.50
OPW TV TUNER for Philips + Commodore monitors.....	£49.00
GOLDEN GATE 386/25 Bridgeboard for 1500/2000/3000.....	£425.00
TV TUNER for Philips and Commodore monitors.....	£69.00

PRINTERS

STAR LC24/200 COLOUR inc. free lead.....	£269.00
STAR LC200 9 pin colour inc. free lead.....	£189.00
STAR LC20 9 pin mono inc. free lead.....	£132.00
CITIZEN SWIFT 24E 24 pin colour printer inc free lead.....	£265.00
CITIZEN 224 COLOUR 24 pin colour printer inc free lead.....	£222.00
CITIZEN SWIFT 9 COLOUR 9 pin colour printer inc free lead.....	£181.00
CANON BJ10 EX bubble jet printer inc free lead.....	£232.00
STARJET SJ48 bubble jet printer inc free lead.....	£225.00
HP DESKJET 500 inkjet inc free lead.....	£349.00
HP DESKJET 500 COLOUR inkjet inc free lead.....	£539.00
CITIZEN 224 MONO 24 pin mono printer inc free lead.....	£209.00

MEMORY

SUPRA RX500, 8Mb board for A500 with 1Mb.....	£92.00
SUPRA RX500, 8Mb board for A500 with 2Mb.....	£117.00
SUPRA RX500, 8Mb board for A500 with 4Mb.....	£185.00
SUPRA RX500, 8Mb board for A500 with 8Mb.....	£285.00
A500 512K RAM WITH CLOCK AND SWITCH.....	£29.00
A500 PLUS 1MB RAM UPGRADE.....	£37.00
ROM 1.3/2.0 Sharer With Switch (Rom 1.3 £22.00).....	£12.00
ROM 1.3/V 2.0 Sharer by Keyboard reset (Rom 1.3 £22.00).....	£22.00

MODEMS & FAX

Supra 14400 Fax modem v32 bis inc. comms software.....	£255.00
Miracomm WS4000 v21, v23 modem.....	£49.00
Supra 9600 v32 Fax/Modem inc. comms software.....	£189.00
Supra 2400 Plus, MNP5 & V42 Bis (speeds up to 9600).....	£129.00
Supra FAX MODEM SOFTWARE.....	£69.00
Supra 2400 Plus Internal Modem for A1500/B2000.....	£159.00
Supra 14400 HST Fax Modem (Speeds up to 57000) NEW IN.....	£499.00

**EXTENDED WARRANTY
AND MAINTENANCE
CONTRACTS AVAILABLE
ON ALL ITEMS. PLEASE
CALL FOR FURTHER
DETAILS**



First... let's digress. Let's talk about cockroaches. When I was a student, I minded very much about these little fellows. I minded the fact that although they had so little going for them on the charisma front they seemed to do so well out of life. How is it, I wondered that when mankind has managed to get rid of so many mild-mannered and inoffensive species in the world without really trying, these revolting things were not on the retreat, not on the threatened list, but actually prospering. In our boiler cupboard at least.

Well, the short answer is that they've worked at it. Faced with the hatred, fear and loathing of every right-minded creature, they evolved themselves into a position of, if not strength, then resistance. They

"One school of thought... follows the principles of genetics to evolve solutions"

seemed to settle down early on, adjust to the fact that the world was a cockroach hating jungle, and get on with developing little skills, like surviving six months in a vacuum cleaner, a genuine hunger for dry flakes of paint and the ability to walk away from an all-out nuclear attack.

The heart-warming success-in adversity story of the cockroach just goes to illustrate that in this life the prize generally goes to the strongest. If you're weak, then goodnight. (Hard

stuff, I know, but, no-one said it would be easy).

I'm here over the next few months to show you how this 'red in teeth and claw' outlook in life can help you, there, sitting at your Amiga. I'm going to be giving you the low-down on writing a system that takes a tip from the repulsive cockroach and evolves; starting off as a confusing maze of instructions and ends up as taut, lean code that simulates a cockroach in solving the problem of finding food.

BIOLOGICAL NECESSITIES

This month, I'm going to go over the biological stuff you need to know and give some of the more relevant theory a dust-down; next month, we'll get down to specifics. As the series runs, I'll describe the particular set-up for creating the cockroach, setting it running, and watching it bang its head on obstacles. After that crazily exciting experience, I'll talk you through the AMOS code that it needs to make it evolve what you could call a slightly more intelligent attitude to its environment.

Let's face it; nature is better than us at most things. In particular, it has a great ability to produce organisms which can survive despite vast changes to their environment. In the short term an organism gets by with instinct, intelligence and luck. In the long term the survival of individual species rests with a process called natural selection.

NATURAL SELECTION

Natural selection works on a "throw enough muck at the wall..." principle. The stuff that sticks to the wall, or survives, is a better solution than the stuff that doesn't; if you filter out the better stuff and use it as the basis for the next handful to be thrown, you'll soon approach an

LAZING

by the gene pool

Ever fancied creating an intelligent life form with an Amiga - it's easier than you think. Sit back and relax as Philip Gladwin shows you how it's done...

optimal solution to your problem of survival. And this, given that nature can't be said to have an intellectual understanding of problems, is a powerful problem-solving technique. (Of course, nature has a cast of billions, a huge budget, and millions of years to sweep mistakes under the carpet, but we'll gloss over that).

GENE GENIUS

So what can we learn from this? We too have many problems of which we can't be said to have a full

understanding. Take modelling the economy or allocating resources on a computer network. What we need is a way of using the computer to work out what the problem is, and getting it to work out its own solutions. One school of thought favours writing software which follows the principles of genetics to evolve solutions. This month I'll be explaining the concepts behind this technique, and over the next few months I'll be giving you code so that you can build your own genetically evolving problem solver.

IT'S EASY - JUST BREED AND DIVIDE AND YOU CAN CONQUER THE WORLD!

There's been research aimed at applying the 'survival of the fittest' theory to computing since the 1950s, but it's generally been low profile, with the majority of the discussion going on in academic papers and assorted PhD theses. Recently the situation has changed a bit; genetic algorithms are more widely known, and they've started to make it into the popular science press with some regularity.

A man called John Holland is probably most responsible for this growth in interest. In 1975, he published the inspirational *Adaptation in Natural And Artificial Systems*. This laid down methods of representation still used widely today. His success was to represent chromosomes as bit strings (strings of 0s and 1s), and to invent a genetic algorithm to manage operations on these bit-strings to alter and improve conditions.

To understand how it all works, take these bit-strings as representing rules, conditions and actions. Imagine two 8-bit bit-strings, or rules: 10110001 and 17771?10. In this case assume that the first six bits represent the input section of the string, (the conditions for this rule) and the last two bits the output pattern (the actions).

TERMS AND CONDITIONS

The first rule is straightforward - if it encounters another string that matches its input pattern of 101100 then it requests that the action 01 is taken. The second rule introduces the idea of wildcards. All a string has to do to match the condition for rule 2 is to have a 1 in its first position and a 1 in its fifth.

The question marks indicate that it doesn't matter what fills the other bit positions.

Rule 2, when its conditions are fulfilled, requests the action 10.

Now, let's go further. Make each place in the bit-string stand for a characteristic.

Define each place in the string as standing for a particular feature, creating a concept template. Measure other strings by this template. So if your rule is looking for a particular characteristic it would be looking out for a '1' in that slot in the strings it was given. If it wanted the characteristic to be absent it would look for a '0'.

A string to recognise a human baby (see the diagram on page 110) would have an input section with feature places like "cries", "small", and "wriggles".

The output section of the string would be made up of similar features designed to trigger specific actions in the rest of the system.

small	cries	wriggles	made of jelly	feed it	eat it
1	1	?	?	0	0
1	0	?	?	0	0
1	0	0	1	0	1

- 1 If it is small and crying: *feed it*
- 2 If it is small and not crying: *do nothing*
- 3 If it is small, not crying, not wriggling, and made out of jelly: *eat it*

A '?' indicates that the rule isn't bothered about that feature in that context. More than one rule can match the same input section; use the rule that matches it more completely

THE THREE RULE CLASSIFIER SYSTEM IMITATING A PRE-TEENAGE BABYSITTER

MATE OR MUTATE?

Let's go on looking at the real world for a bit. In any particular species, 'survival of the fittest' weeds out all the failures, but that's only a part of the story. Without regular shake-ups it would be easy for a species to become inflexible – that is, well adapted for living in one particular environment, but rigid and vulnerable as soon as things changed.

The mechanics of sexual reproduction are what ensures this doesn't happen. Sex continually stirs the gene pool to provide a supply of new physical characteristics. This shake-up occurs at conception, when the sperm and the ova swap genetic material. Chromosomes from each side pair off according to type, and cross over part of the way along their length. The new organism is provided with a varied bag of genetic material, giving rise to fresh possibilities for combinations of physical characteristics, greatly speeding up evolution. Of course, random mutations would eventually throw up changes in organisms reproducing without this cross-fertilisation, but the blending that sex provides is a much stronger way of doing it.

RANDOM ALTERATION

All well and probably true, but how do we apply this to computerised problem solving? You know how picky computers can be; imagine the protests you'd get from your compiler if you "mated" a few C programs by hacking out all your favourite chunks and slinging them all together into a single super-program. Or if you "mutated" an AMOS program by randomly altering every 100th line.

Dodgy as it sounds, there's got to be some mileage in the idea – look what it's done for the world over the last few billion years.

AMAZINGLY INTELLIGENT

Let's take yet a swipe at simulating intelligent behaviour with an Amiga. And to make it even harder, this time, intelligence must arrive out of nowhere, erupting out of a random sea of bit-strings.

To start off, I'll offer you a target definition of the type of intelligence I'm going to try and simulate.

This definition comes courtesy of a physicist called van Heerden. He said that, "Intelligent behaviour is to be repeatedly successful in satisfying one's psychological needs in diverse, observably different, situations on the basis of past experience."

This may be debatable, but go along with it for a bit. Imagine a very primitive organism, existing only to find food. Imagine an environment in which to put this organism. (Like, say, a maze, with the odd bit of food lying around).

In order to simulate this on a computer we'll need a data structure to take the place of the organism, and another data structure for the maze.

PAST RECORDS

It's fairly easy to simulate "satisfying one's psychological needs" by giving the data structure a reward. Similarly, you can give the data structure an awareness of "observably different situations" by giving it a system of input channels responsive to changes in its surroundings. Finally, "past experience" becomes some sort of record of previous interactions with the maze and their results.

It's not too hard to imagine an expert system that could do this, given enough thought on the part of the programmer. But the single biggest problem with expert systems is that they need someone to code every single one of the rules that they will use. In the case of complex problems this involves many cycles of design and test, and the hardest problems may just be too complicated to manage.

INTO THE MAZE

So, let's make our situation more interesting by programming the bare minimum into the situation. Start off with the organism and the maze. Give the organism restrictions on its movements (eg it can't walk through walls) and rewards when it finds food.

By creating this environment, and a data structure with a means to perceive that environment, and a means of associating changes in its perceptions with movements it has made, we have created a basic feedback circuit – it perceives, moves, gets new perceptions; sometimes it gets rewards. The trick is to get the data structure to link it together and begin to "learn" which movements produce which sensory signals, and in particular, which movements result in rewards.

This, then, is the problem: by starting the program off by creating a random selection of rules which have little or no relevance, the task becomes a matter of: finding and emphasising the rules that work well; getting rid of those which don't; and making sure that the rules which are kept are as useful as possible.

COMING SOON – LOST IN THE FOREST

Next month I'll be going into more detail regarding more problems, the programming practices you need to get into, and an explanation of how the code I'm giving you works to simulate a tiny string creature evolving intelligence as it wanders around a leafy wood. (Honest). **AS**

EVOLUTION – IT'S THE REAL THING

In the real world the problem solved by evolution for each species is that of finding ways of changing to survive in and exploit a complicated and changing environment. Each species acquires experience of how to live in the world and accumulates this experience in a bank maintained in the chromosomes of each member of the race. When reproduction occurs, this chromosomal make-up is altered, via operations such as random mutation, inversion of chromosomal material and crossover. The effect of random mutation is to maintain a low background level of change with the occasional injection of beneficial alterations. Inversion changes the locations of genes on a chromosome, upping the likelihood of them being transferred together during crossover. Crossover swaps corresponding genetic material from two parent chromosomes. This has the effect of allowing useful genes from different parents to be combined.

Genetic algorithms get their strength from the heavy use of the crossover process, which acts to speed up the mixing process. If crossover didn't occur, then for a given individual to receive two good mutations, one of the mutations must occur to a parent, and then the second mutation must occur to one of that parent's offspring. Therefore it would be easy for a species reproducing without crossover to have a population containing members with one or other of the two mutations, while no member had both. With crossover, beneficial mutations on two parents can be combined immediately when they reproduce; if the most successful individuals use crossover and reproduce more often than less successful individuals, then it's much more likely that this will happen.

SPECIAL OFFER SPECIAL OFFER

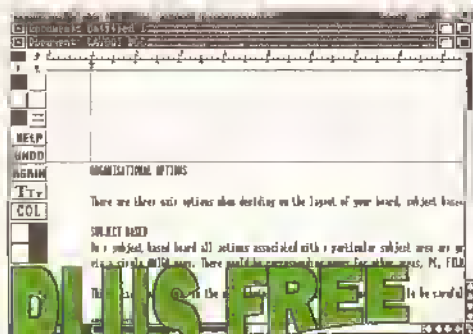
AMIGA SHOPPER

**SAVE
£££s**

**Now's your chance
to take advantage
of all the bargains
we've lined up for
you at special
prices, a chance you
can't afford to miss**

MAIL ORDER

Order direct from Amiga Shopper



**PLUS FREE
HOME ACCOUNTS**

when you order Digita Wordworth

DIGITA WORDSWORTH

Digita's acclaimed *Wordworth* word processing package was first reviewed in Issue 4, when Jeff Walker said: "Heavens, there's so much to the package." Since then it has been further improved. It comes with a spell checker, a thesaurus, an on-line help facility, and one of the best manuals we've ever seen. It also has a whole load of attractive fonts and, of course, excellent facilities for incorporating graphics into documents.

**ONLY
£89.95**

DESCRIPTION	PRICE	ORDER
Digita Wordworth	£89.95	SHWORD

**Order using
the form on
page 114 or
use our credit
card hotline on
0458 74011**

SAVE SAVE SAVE

GASTEINER OPTICAL MOUSE

SAVE £6

This mouse solves all of those sticking trackball problems - it doesn't have one. Instead it uses solid state technology for trouble-free operation.

DESCRIPTION	PRICE	ORDER
Gasteiner Optical Mouse	£29.95	MOUSE



DESCRIPTION	PRICE	ORDER
WTS RAM Upgrade	£24.99	5HRAM

SAVE £6

This excellent expansion for the A500 will take your computer up to 1Mb. It has a battery backed-up clock and follows Commodore's guidelines.



RAM UPGRADE WITH CLOCK

DESCRIPTION	PRICE	ORDER
Connections Interdial M5024 modem	£299.95	CONN INT

This handy little modem will get you into the world of comms with a whizz. With MNP4 error corrections and MNP5 data compression, it will provide data transfer speeds of up to 4,800 bits per second.



INTERDIAL M5024 MODEM

HYUNDAI MODEM

The Hyundai modem is an excellent item for the beginner in comms. It has data transfer rates of up to 2,400 bits per second and supports the V21, V22 and V22bis protocols. You'll also need serial cable and comms software to get started.

DESCRIPTION	PRICE	ORDER
Hyundai HMD2401 modem	£99.95	HYUNDAI



HOME ACCOUNTS 2

SAVE £10

Keep complete track of your accounts with your Amiga and *Home Accounts 2*. With Digita's unique Human Interface Protocol, finance control couldn't be easier.

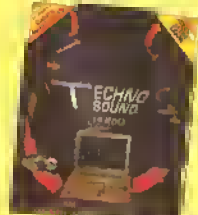


DESCRIPTION	PRICE	ORDER
Digita Home Accounts	£44.99	SHACCOU

DESCRIPTION	PRICE	ORDER
Technosound Turbo	£29.95	SHTECH

SAVE £10

Yo - sample the action! *Technosound Turbo* provides everything you need to sample the delights of Amiga audio. Plug it into your printer port, grab sounds, edit them and add amazing effects.



TECHNOSOUND TURBO

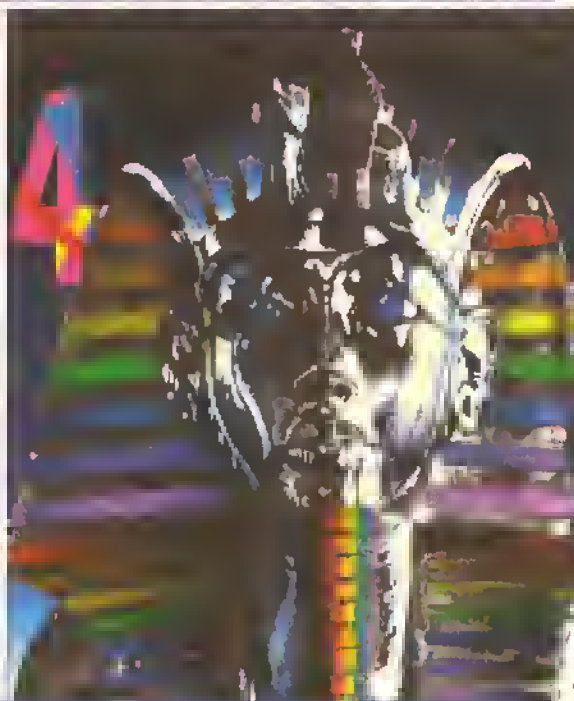
SPECIAL OFFER SPECIAL OFFER

DELUXE PAINT 4

The best Amiga painting package just got better! With a host of features at your disposal, you'll create masterpieces

Since the early days of the Amiga, *Deluxe Paint* has held the position of king of the 20 paint packages. In its latest release, it offers even more power to get those pixels painted. HAM mode is now supported, so you can draw with up to 4096 colours on screen at once. Morphing is also supported to enable you to achieve *Terminator 2* style effects. And, of course, there's *Deluxe Paint*'s acclaimed animation system!

DESCRIPTION	PRICE	ORDER
Deluxe Paint 4	£65.95	5HDP4



ORDER BY CREDIT CARD – RING 0458 74011

OR USE THE ORDER FORM ON PAGE 114



ALL PRICES INCLUDE VAT, POSTAGE AND PACKING



BOOKS BOOKS BOOKS BOOKS

MASTERING AMIGADOS 2 VOLUME 1 BY MARK SMIDOOY AND BRUCE SMITH – BRUCE SMITH BOOKS

This is the essential book for the beginner to AmigaDOS. It explains step by step everything from the rudiments of opening a Shell and copying a disk to the advanced use of scripts. Special chapters are devoted to custom startup-sequences to help you get the best from your set-up.

MASTERING AMIGADOS 2 VOLUME 2 BY MARK SMIDOOY – BRUCE SMITH BOOKS

The second volume in the *Mastering AmigaDOS* range will rapidly become one of your most valuable reference works. It contains an explanation of every single AmigaDOS command, from version 1.2 right up to the new version 2.04.

MASTERING AMIGA SYSTEM BY PAUL OVERAA – BRUCE SMITH BOOKS

Paul Overaa, programming expert and computer journalist, explains in detail how to make use of the Amiga's operating system in your own programs. Learn how to create efficient, operating system-legal code of your own, and to utilise the full power of Intuition.

MASTERING AMIGA PRINTERS BY RDBIN BURTON – BRUCE SMITH BOOKS

Just about everyone has problems with printers and the Amiga. But now, no matter what your set-up – dot matrix, bubble jet or laser – you'll learn how to get the hardcopy results you want with *Mastering Amiga Printers*. This the definitive Amiga printing guide.



DESCRIPTION	PRICE	ORDER
MASTERING AMIGADOS 2 VOLUME 1	£19.95	5HMAD 1
MASTERING AMIGADOS 2 VOLUME 2	£17.95	5HMAD 2
MASTERING AMIGA SYSTEM	£27.95	5H5YST
MASTERING AMIGA PRINTERS	£17.95	5HPRINT

SPECIAL OFFER SPECIAL OFFER

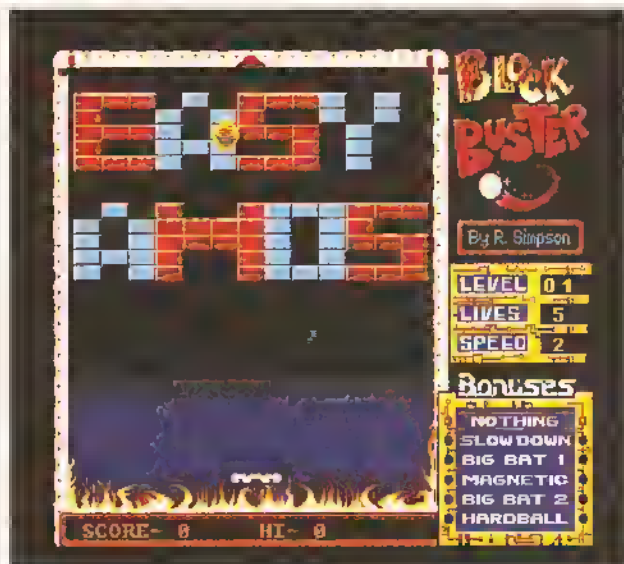
EASY AMOS

**SAVE
£14**

*Delve with confidence
into the world of
programming with
Europress' Easy Amos.*

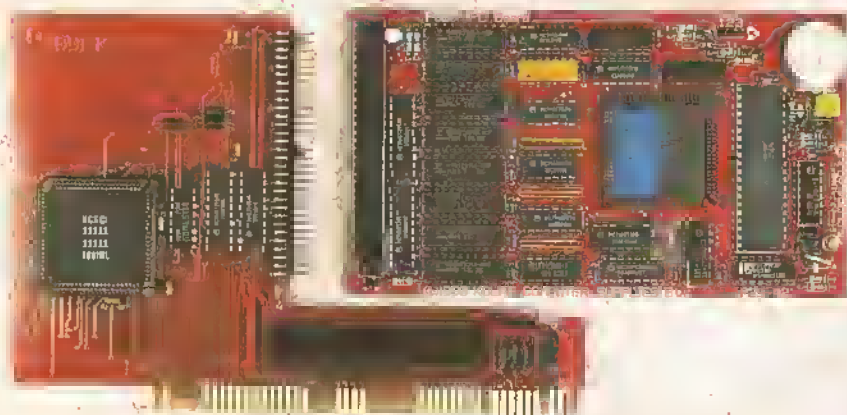
Easy Amos retains all the features that have made AMOS so popular – easy support for graphics, sound and so on – but makes the task of programming so much easier for the beginner with on-line help, tutorials plus much more.

DESCRIPTION	PRICE	ORDER
EASY AMOS	£29.99	SHEASYAM



TURN YOUR AMIGA INTO A PC!

WITH THE KCS POWERBOARD



*Your chance to take
advantage of the wealth
of business software for
the PC, without
changing your
computer! The KCS
Power PC Board plugs
into the Amiga to
provide almost 100%
PC XT compatibility*

The KCS emulator is available as a trapdoor expansion for the A500 and A500 Plus, or with a plug-in card for the A1500/A2000/A3000 series. It comes with 1Mb of extra memory, too

DESCRIPTION	PRICE	ORDER
KCS POWERBOARD PC	£179.95 EXCLUDING DOS	SHPONLY
	£199.95 INCLUDING DOS	SHPCDOS

SLOTS INTO ANY A500 FOR COMPLETE PC COMPATIBILITY

POWER PC BOARD ADAPTOR FOR 1500/2000

You need this adaptor to plug a Power PC Board into your A1500/A2000. Look with envy no longer at A500 owners – now you too can explore the benefits of the IBM PC compatible world.

DESCRIPTION	PRICE	ORDER
Power PC Board adaptor for 1500/2000	£65.00	SHPCADAP

SPECIAL OFFER SPECIAL OFFER

DESCRIPTION	PRICE	ORDER	DESCRIPTION	PRICE	ORDER
AMOS	£35.95	SHAMOS	AMOS COMPILER	£21.95	SHAMCOM



AMOS

AMOS

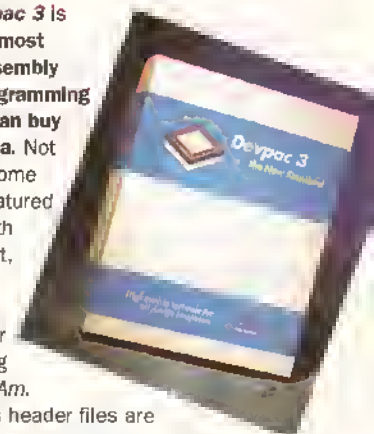
AMOS is one of the best implementations of Basic available for the Amiga. With it, users can quickly create stunning graphical and audio effects. It's no slouch when it comes to writing serious programs, either.

AMOS COMPILER

AMOS programs are pretty fast, but if you feel the need for even more speed, then the AMOS Compiler is for you. Your programs will become stand-alone applications, independent of the AMOS Interpreter.

DEVPAC 3

HISoft's Devpac 3 is probably the most advanced essembly language programming system you can buy for your Amiga. Not only does it come with a fully-featured assembler with macro support, but it also includes HISoft's editor and debugging program MonAm. Commodore's header files are supplied, so you can create Amiga applications immediately.



DESCRIPTION	PRICE	ORDER
DEVPAC 3	£65.95	DEVPAC 3



BOOKS BOOKS BOOKS...

SAVE £2
ON EACH
TITLE

DESCRIPTION	PRICE	ORDER
INTUITION: A PRACTICAL AMIGA PROGRAMMERS GUIDE	£14.95	INTUIT
PROGRAM DESIGN TECHNIQUES FOR THE AMIGA	£14.95	DESIGN
MARK SMIDDY'S LITTLE BLUE WORKBENCH 2.0 BOOK	£12.95	LITTLE

INTUITION: A PRACTICAL AMIGA PROGRAMMER'S GUIDE BY MIKE NELSON - KUMA PUBLICATIONS

Use of Intuition, the Amiga's graphical interface, is essential for giving your programs that professional look and maintaining compatibility across different versions of the operating system. This book shows you how, with sections on screens and windows, communications, menus, gadgets and requesters.

PROGRAM DESIGN TECHNIQUES FOR THE AMIGA BY PAUL OVERAA - KUMA PUBLICATIONS

If you've ever written reams of code only to find that it doesn't work and you can't find the bugs, then this book is for you. It shows you how to design your programs before typing them in, ensuring more reliable and efficient code.

MARK SMIDDY'S LITTLE BLUE WORKBENCH 2.0 BOOK - KUMA PUBLICATIONS

Mark Smiddy, probably one of the most knowledgeable Workbench gurus, brings you this guide to the Amiga's operating system. Handy tips include how to make a boot disk, how to set up a printer with the right driver, and how to customise your startup-sequence, with extensive examples.

ORDER FORM

SEND THIS FORM TO:
Amigo Shopper,
Future Publishing Ltd,
Somerton,
Somerset, TA11 7BR

Do not send cash through the
post with your mail orders

Please make all cheques
payable to Future Publishing

Name _____
Address _____
Post code _____
Telephone No _____

Description	Price	Order No

Total Order

Machine (please circle) A500 ● A500+ ●

Method of payment (please circle) Access ● Visa ● Cheque ● PO ●

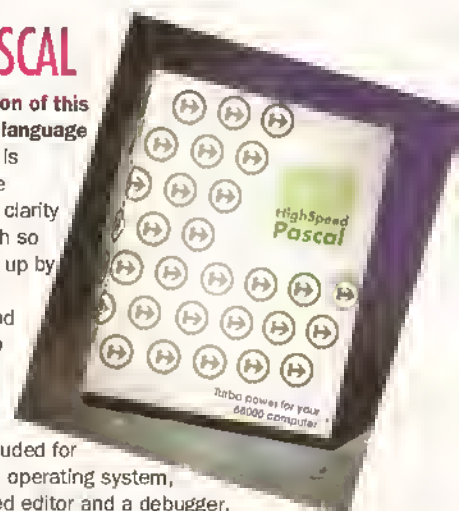
Credit Card No. _____ Expiry Date _____ Signature _____

HISOFT PASCAL

At last there's a version of this
popular programming language
for the Amiga! Pascal is

popular throughout the
academic world for its clarity
and precision, so much so
that it has been taken up by
large portions of the
commercial sector. Find
out why it has done so
well with HISoft's
blindingly fast version,
HighSpeed Pascal. A

full set of files are included for
accessing the Amiga's operating system,
as well as an integrated editor and a debugger.



DESCRIPTION	PRICE	ORDER
HISOFT PASCAL	£89.95	HISOFT P

Maxiplan 4 is the latest version of one of the most powerful Amiga spreadsheets available – and one which Commodore saw fit to include in one of its special packs. It sounds very impressive – basic features include multiple-spreadsheet views, outlining and basic project planning. An extensive macro language plus an entirely text-based chart type allow for complex presentations to be built up. Is *Maxiplan* as good as all that?

Installing the program to hard disk is a drag since the authors have not supplied a suitable installation script. According to the documentation, you simply copy the *Maxiplan* drawer from the distribution disk on to a hard disk partition. Next you have to add a line to the Startup-sequence to enable *Maxiplan* to locate its required files. Modifying a startup-script is not something for the beginner or business user and is simple to perform from an AmigaDOS script. Also, under Workbench 2 the User-startup script is designed for third-party software – the main file should be left well alone. Just to

make things worse, the version supplied for review required an extra library present in the LIBS: directory.

The instant the program appears on a modern Amiga, it begins to show its heritage. The design looked pretty good back in 1989, but as time has moved on, *Maxiplan* has stolidly stayed put – and in computer terms that puts it back in the bronze age. These days, 3D bas-relief is in – not just because it looks attractive, but because it's functional. Where most modern WIMPs are picked out in cool stone-grey, *Maxiplan* instantly insults the eyes with a brash, puce and azure colour scheme.

COLOUR LIMITATIONS

On the subject of colour, it is interesting to note that the current version does not display 16 colours on medium resolution – so unless you have a flicker fixer, eight colours is the realistic limit. In addition, setting the Tooltypes (startup configuration strings) from Workbench is not described in adequate detail. The tooltypes array is case sensitive ("ABC" is not the same as "abc") and although the tooltypes are illustrated in

The max FACTOR

uppercase, the stipulation is not made.

It would have been simpler if The Disc Company had set some example tooltypes for the inexperienced user to edit. Although the manual claims *Maxiplan* will support future variations of colour and screen resolution, it seems to have forgotten Productivity, SuperHiRes and A2024 modes all supported by recent hardware and Workbench 2.

Cancel the default opening file requester (a nice but often annoying feature) and a new window opens. The menus (from left to right) begin with Print followed by "D" followed eventually by File. This might seem a minor objection, but the thinking behind Apple's idea of keeping *all* software functionally the same is clearly illustrated here.

Most Amiga applications follow similar guidelines and place the File menu (which should include Print) as the leftmost option. Worse still, the paste key is A+P – not the standard A+V – which incidentally freezes rows. Experienced users will find this system an irritation; beginners, confusing.

An enhanced file requester is available by copying *Maxiplan*'s extra requester (req.library) into the Workbench's LIBS: assignment.

Although better than the default one, this has two problems: first the name may not be unique – and should have been prefixed with something like "MP" to make it so.

(Wordworth users will note, its requester library starts with "WW", an example of how it should be done.) Second, continued on page 117

Maxiplan 4 is the latest release from The Disc Company. It's a spreadsheet aimed squarely at the professional market – but is it good enough?

DIAGRAM TO ILLUSTRATE THE CONCEPT OF OUTLINING

A	B	C	D	E	
	January	February	March	April	
1 Sales	20,000.00	21,000.00	22,000.00	21,000.00	22
2 Interest	600.00	600.00	600.00	600.00	
3					
4					
5 Total In	20,600.00	21,600.00	22,600.00	21,600.00	22
6					
7 Stock	35,000.00	0.00	0.00	35,000.00	
8 Phone	0.00	0.00	0.00	8.00	
9 Wages	2,000.00	2,000.00	2,000.00	2,000.00	2
10 Rent	4,000.00	4,000.00	4,000.00	4,000.00	4
11 Htg, Ltg	300.00	300.00	300.00	300.00	
12 Others	900.00	900.00	900.00	900.00	
13					
14 Total out	42,200.00	7,200.00	7,200.00	43,000.00	7
15					
16 Profit	-21,600.00	14,400.00	15,400.00	-21,400.00	15
17 Balance now	10,000.00	-11,600.00	2,800.00	18,200.00	-3
18 Balance avail	-11,600.00	2,800.00	18,200.00	-3,200.00	12

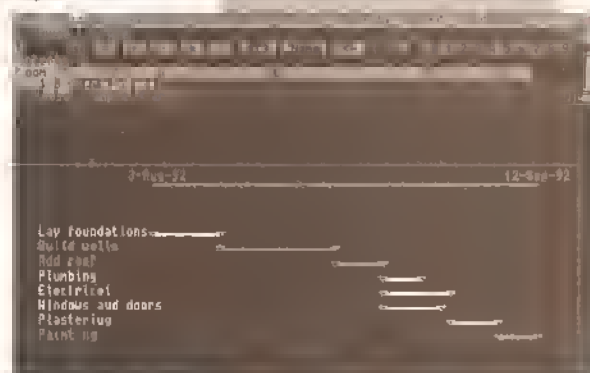
Outlining at its lowest level shows the whole of the sheet with all the details

A	B	C	D	E	
	January	February	March	April	
1					
5 Total In	20,600.00	21,600.00	22,600.00	21,600.00	22
14 Total Out	42,200.00	7,200.00	7,200.00	43,000.00	7
15					
16 Profit	-21,600.00	14,400.00	15,400.00	-21,400.00	15
17 Balance now	10,000.00	-11,600.00	2,800.00	18,200.00	-3
18 Balance avail	-11,600.00	2,800.00	18,200.00	-3,200.00	12

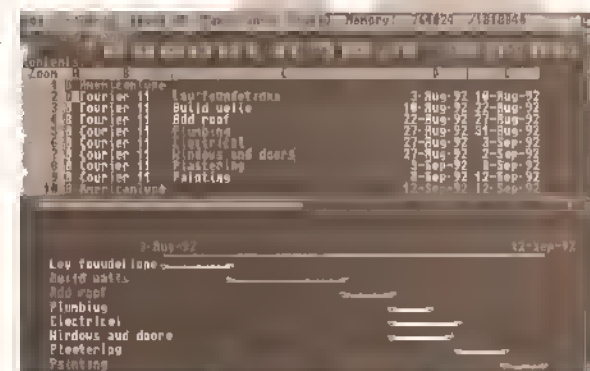
Outline level 2 (In this example) removes most of the private detail and provides detailed summary data

A	B	C	D	E	
	January	February	March	April	
1					
5 Total In	20,600.00	21,600.00	22,600.00	21,600.00	22
14 Total out	42,200.00	7,200.00	7,200.00	43,000.00	7
15					
18 Balance avail	-11,600.00	2,800.00	18,200.00	-3,200.00	12

Outline level 1 shows only the summary results



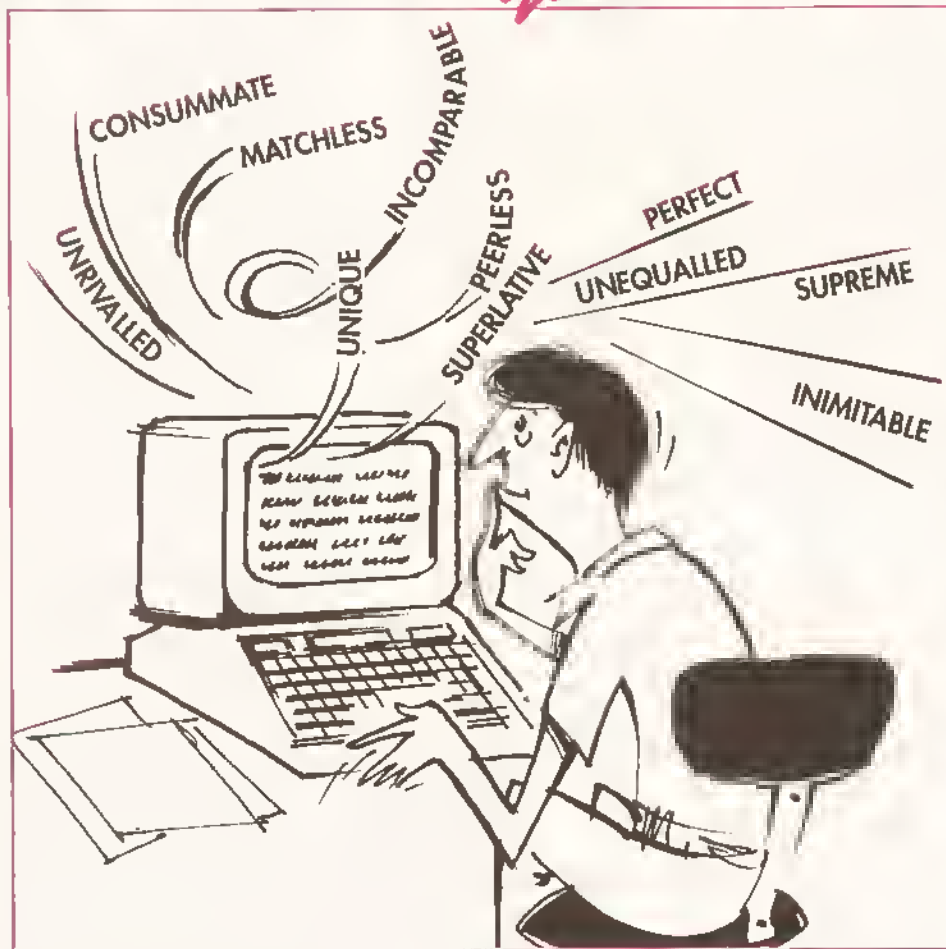
An example of a basic Gantt chart created with *Maxiplan* 4. Each project is displayed as a single line



A Gantt chart with the corresponding data on view. In the upper window for comparison

PROTEXT 5.5

"You won't be lost for words" . . .



"it's bloody brilliant"

ST FORMAT

"one hell of a performer"

COMPUTER SHOPPER

"if you need a professional word processor Protext is perfect"

AMIGA COMPUTING

"nothing else available comes close"

ST APPLICATIONS

PRODATA 1.2

New version of Prodata now with pull-down menus, mouse or keyboard operation, automatic record numbering, merge database, instantaneous filtering, prologue form, edit fields in any order, 2-across label printing. Full details available from Arnor.

Price: £85+VAT, upgrade from v1.1 £30+VAT.

PRICES (including VAT and delivery)

For Commodore Amiga, Atari ST or TT.

Protext 5.5 £152.75

Upgrade from 5.0 to 5.5 £30

Upgrade from 4.2/4.3 to 5.5 £60

Please return your original disks when upgrading

French or German spelling dictionary £35.25

When upgrading please return any extra spell checking dictionaries for a free update to the revised version.

. . . with Protext 5.5 because the pop-up thesaurus will provide you with inspiration whenever you need it. With words provided by Collins the thesaurus has 43,000 main entries and 827,000 responses!

Protext 5.5 introduces enhanced text formatting options. Automatic hyphenation lets you produce a well-spaced page layout without the bother of manually putting in soft hyphens. Protext determines the correct hyphenation points by algorithms and look-up tables. Elimination of widows and orphans is also provided. You will no longer need to worry about those infuriating single lines of the top or bottom of pages. Protext formats the text to avoid these as you edit the text. Extra blank lines at the top of a page can be suppressed.

New document analysis features provide a wealth of information about your text. You can examine a list of all the words used - alphabetically or by the number of occurrences. Other statistics shown include average word length, average sentence length and a table of the number of lines on each page.

Plus many more improvements . . .

- ☆ Enhanced file selector with different sorting methods, bulk copy and erase.
- ☆ Prodata users - mail merge directly from Prodata files, no need to export.
- ☆ Mail merge: nested repeat loops.
- ☆ New window-based help facilities.
- ☆ Improved line drawing.
- ☆ Spelling checker finds repeated word and missing capital letters.
- ☆ Conversion to and from WordStar 5.5 and Microsoft RTF
- ☆ Full printed documentation of new features.

Of course Protext still includes . . .

Choice of pull-down menu or keyboard operation, extensive printer font support and proportional formatting while editing, up to 36 files open, split screen editing, characters for 30 languages, index and contents, footnotes, newspaper column printing, file sorting, macros, indent tabs, mail merge programming language, exec files and the fastest search and replace around. Altogether the most comprehensive word processing software for your Amiga or ST.

☆ Both Protext 5.5 and Prodata require 1Mb of memory



ARNOR

Arnor Ltd (AS), 611 Lincoln Road, Peterborough PE1 3HA. Tel: (0733) 68909 Fax (0733) 67299

continued from page 115

what about Workbench 2's ASL library? If this program is really Workbench 2 compatible, why isn't it aware of the standard file requesters?

REDEEMING FEATURES

I have detailed these major problems with *Maxiplan* early to allow the casual reader to reflect if this program may be worth considering. For most users, there are far more friendly systems around – but *Maxiplan* has many redeeming qualities that should be considered by the hardened professional user.

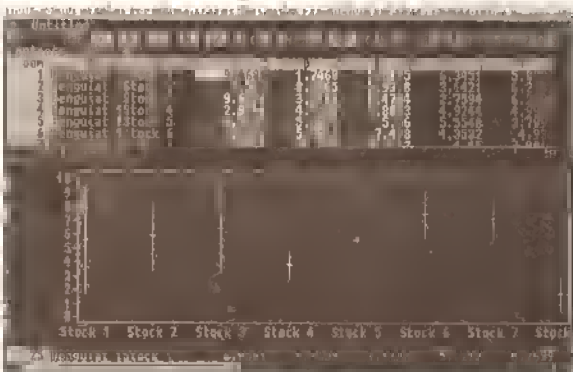
First time users will find *Maxiplan*'s help system a real boon. Help is available for all menus – listed within the menu itself. The help system is quite extensive and often better than the supplied documentation. Likewise, the (almost obligatory) Paste Function feature includes a syntax helper within the requester.

Users creating sheets for others to use will find *Maxiplan* offers an interesting option to assign names to cells and ranges. This can make formulae in particular a lot simpler to read and debug.

As an example:

=(INCOME-EXPENDITURE)

Programmers will find *Maxiplan* has an interesting facility called Desk Accessories. This concept, which is "borrowed" from the Macintosh, allows third party tools to operate with the program. When *Maxiplan* is opened it searches for any accessories stored in a special drawer within the *Maxiplan* drawer



Wall Street, here I come – *Maxiplan* 4's hi-lo chart with a simulated stock analysis as data

and adds them to its "D" (desk accessory) menu. Tools (programs) which will open to the front most Amiga screen can be used in this way, an example calculator is supplied although this is of limited use.

Typically accessories should support the Amiga's clipboard device so data can easily be exchanged

list than they are in practical terms. Completed charts can be viewed, printed or saved as IFF files.

The charting feature works much like *Advantage* in that you select a range with the mouse and choose a chart type. Data and labels are parsed automatically. Unusually, once the chart has been drawn it is possible to override the default settings. For instance, a typical range might be from A1 to F25. Either the row or column data can be re-written to include more or less of the chart. In this case we could select rows 1 to 12,

rows 15 to 22 and row 25.

Although simpler than conventional systems where each data range must be determined individually, this seems an odd compromise; even so it's rather nice to have the option.

The requester dealing with this also holds the chart Max and Min settings for each axis, chart and axis titles, plus the labelling options. This does group a lot of things together and looks cluttered, although that has a lot to do with the requester's poor design.

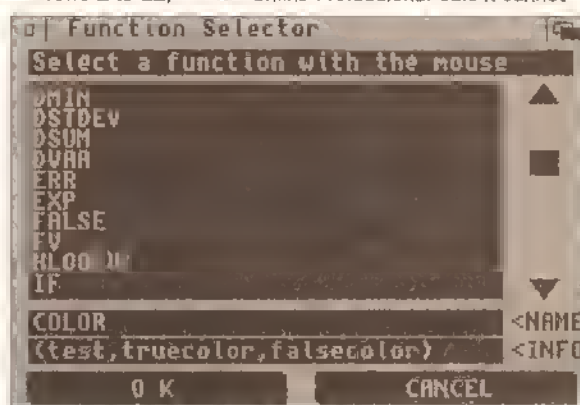
Oddly enough, setting the font and size of the chart text is done within the 'sheet – not as part of the graphics options.

CHART TYPES

Unlike most conventional systems there is more to most of the *Maxiplan* charts than meets the eye – and with a bit of interactive trickery, *Maxiplan* can throw some interesting loops.

As is the case with all other Amiga spreadsheets, *Maxiplan* has no facility to draw to different charts or two different Y axes on the same display. At least it does offer up to 50 charts per 'sheet and a Log scale on some types – which is more than can be said for any of its competition. The following graph types are offered:

- **Pie charts:** are the most basic of them all – since they only display the result of one data set. *Maxiplan* has two variations: standard and 3D. Unlike *Professional Calc* it cannot



Help is on hand for each of the functions within *Maxiplan* 4. Information at the touch of a button

display multiple pies. Any segments on flat pie can be "exploded" or its value displayed with little more than a mouse click; the explode distance is fixed however. 3D pies do not support segment view or explosion, but they can be rotated to enhance the viewing angle.

- **Line charts:** display data in a join-

MAXIPLAN WHO?

Maxiplan 4 has gone through a succession of name changes and distributors, and bears more than a passing resemblance to Best UK's, *Plan/IT* 3.0. The truth is, in spite of the name, the two are more or less the same thing and version 4 adds too few extras to warrant such a major version number. More likely this was a marketing decision as the program reverted to its previous identity, last known as *Maxiplan* 2, as Best UK no longer exists.

is simpler to read and more meaningful than:

=(A12-A35)

similarly,

=SUM(PROFITS)

is nicer than:

=SUM(A2:A11)

Like *Professional Calc*, *Maxiplan* features "outlining" – it was the first Amiga sheet to offer it too. As I noted in the *Pro Calc* review, outlining is difficult to describe – but in essence the idea is to define "outlines" which display certain parts of a 'sheet. Outlines can be nested too. Take a look at the illustration on the previous page for an example of outlining at work.

between the accessory and the spreadsheet. Strangely enough, although *Maxiplan* does support the Amiga clipboard (and too few programs do in my view) it also has its own version. In effect this means there are two broadly similar Copy and Paste operations: normal – *Maxiplan*'s own clipboard) and external – the Amiga device. I would hope this confusing feature is rectified in a future release.

GRAPHS AND CHARTS

Maxiplan's charting functions have always been one of its strongest points and the latest release is no exception. Although trickier to use than say, *Professional Calc* in this respect, *Maxiplan* has a better choice and more useful options. Some – such as patterned background dithering (vignettes) – are more impressive on a features

JARGON BUSTING • JARGON BUSTING

Function – A spreadsheet facility to perform a special calculation – just like the functions on a calculator. Most spreadsheets have far more functions than even the most powerful calculators. These will range from financial, to mathematical and even scientific. You can use these internal functions to build new ones using macros.

Log scale – Data points on a log scale increase according to a logarithmic rule. This means very large changes in value can be shown on the same chart. Typically this finds use in scientific applications such as charting sound pressure changes measured in dB (decibels).

Macro – In spreadsheet parlance a macro is a miniature program built from spreadsheet functions and (usually) special macro program functions. A macro is usually used to either automate certain operations or even build completely new meta-spreadsheet applications.

Worksheet – A *Maxiplan* spreadsheet. The term spreadsheet can be used to refer to the spreadsheet application program or an open spreadsheet window where you do your work: hence the contraction, Worksheet.

Shopper Reader Ads

... Or how you can reach 50,000 fellow Amiga owners for only a fiver

FANZINES

Lucy Benjamin fanzine SAE for details of magazine devoted to the star of Press gang
Nicholas Hall, 12 Alderney Ave, Parkstone, Poole, Dorset BH12 4LG ☎ 0202 722798

DPaint Fanzine tips and PD Graphics Galore issue one Batman Returns Movie Special Two disc hires set : send only £2.50 to Howard Konach, 6 Wenlock Road, Sale, Cheshire, H333TR.

WANTED

Wanted Amiga A500+ Cartoon Classics pack with games and joystick must be boxed will pay up to £230. Will collect. ☎ 0533 418821 after 7

Wanted Amiga v1-3 with memory expansion and game software. Must be boxed will pay up to £200 cash and will collect ☎ 0533 544371

Canon BJ10E empty, used ink cartridges. Good prices paid or will swap one new for three old. ☎ Bob on Oxford 0865 67458 after 7pm today

Issue one Amiga Shopper exchange for video "Amiga Tutor" or haggle price good cond please ☎ 0745 338319

Wanted Issue 1 of Amiga Shopper Up to £5 offered for mint copy. ☎ between 4.30 and 7pm Ask for Kevin 0604 756035

PERSONAL

Contacts. 100s on disk list 95p Amiga Post Disk mag 95p PD to swap cat disk 95p Allen PO Box 21, Linsfield, Surrey RH7 6YJ

Qualified "C" programmer. with software engineering experience, seeks contract/permanent work. I am most experienced on the Amiga but have good experience of other

computers/ systems. Chris 03473 420

FOR SALE

1Mb RAM for A500 Plus £25 ICD flicker fixer (not plus) £70 Amiga mouse £10 Vistapro £25 scenery animator £25 ☎ 0264 350125 ask for Tony

CDTV vgc with five titles only £290 Colourburst 24-bit graphics unit for any Amiga any monitor pure RGB output with 16.8 million colours £280 ☎ 0264 350125 Ask for Tony

Amiga software Drakken £6. Silent service 2 £10, F19 £8, Devpac 3 £30. F15 II £10. Kings Quest 5+ hint book £15. Thunderhawk £6. Heroquest + data £11. ☎ Mr Cook 0622 664102

Quantum 105Mb ips hard drive £175 2Mb Chip RAM for A3000 will split £20 per 1Mb one ☎ Roelof 081 5532137 after 7pm

Amiga 500 with 590 hard drive 2Mb RAM fitted and CM8833 stereo colour monitor boxed with Maxiplan, Kindwords, Pagesetter, Infofile - total package only £560 ☎ 0235 816251

Microbotics VXL30 high speed 68030 accelerator for A500 A1500 and A2000 cost new £269.95 sell for £180 one ☎ 0276 685957 after 6.30pm

A500+ (1.5mb) GVP Series II hard disk (105Mb) power dual floppies v21/v23 modem software Amiga & GVP less 8 months old excellent condition £750 ☎ 0495 247475

Amiga 1500 Wb2.04 3 months old 106/76 GVP HD II 8 drive CM8833 II monitor 5 meg rom (4 fast 1 chip) four 3.5" floppies 2 intern 2 external cumana £999 ☎ 0628 471047

SAS LATTICE-C 5.10: "C" development package for the

Amiga Includes compiler linker editor source level de-bugger profiler librarian etc. rrp £229 will accept £85 one ☎ 0602 786371

Amiga 1500 two drives Supra Quantum 52Mb hard drive Commodore memory card with 4Mb RAM Commodore 10845 monitor MIDI interface optical mouse excellent cond boxed software £950. ☎ 0705 738647

Solid state 68020 board with 68882 20Mhz £295 Video digitiser £95 Audio Engineer sampler £150 Commodore a 2286 bridgeboard £250 all as new ☎ 0928 715962

10 meg Amiga A500+ 2 meg chip 8 meg fast ROM sharer second dd. cm8833 mkII monitor games books mags vista pro2 £650 one will split 0253 760540

Bars and Pipes Professional £155 Including MIDI interface cumana external drive £20 Mastersound sampler £10 games £19 £5 Their finest hour £5 Indie 500 £5 Dungeon Master ☎ Ray Day 071 239 4561

Unwanted prize Rendale SVHS 58802 genlock list price £499 sensible offers only. Item is unused and brand new top of the range super VHS model ☎ Jan 051 6782491

Amiga B2000 xetec SCSI fast hard drive control card £60 Supra 8 meg RAM board pop 2 megs £110 (eves) 0302 772260 Alan.

Amiga A3000/25 150Mb HD 18Mb RAM Panasonic m/sync monitor star lc24/10 printer £3000 one ☎ Tony on Tewkesbury 0684 297214 eves.

Amiga 500 1 meg Cumana external drive cm8833 monitor, MusicX, MIDI interface, Stereo Master, Pagesetter 2, games loads of PD. £450 one KCS power PC board £120. ☎ 081 573 5296

KCS power board for 1.3 Amiga with MS-DOS £145. KCS Powerboard 1500. 2000 adaptor £45. both £175 half meg upgrade, no clock, unused £16. Digital

It's only £5 to sell your used hardware and software in Amiga Shopper

Sell your excess hardware and software with *Amiga Shopper* Reader Adverts. Just fill in the form and send it to us along with a cheque (made payable to Future Publishing) or postal order for £5. But **BE WARNED**. This magazine is not a forum for selling pirate software or other illegal goods. Software must include all issue disks, manuals and

a signed statement that all other copies have been destroyed. Please advise us if you are offered pirate or copied software by advertisers. All ads are accepted in good faith. The editor reserves the right to refuse or amend ads. We accept no responsibility for typographical errors or losses arising from the use of this service.

Trade ads will not be accepted, including anyone advertising the sale of PD software.

Name Issue 18

Address (not for publication)

Postcode

Date

Tel.....

Tick one box to show required section heading

For sale ☐

Wanted ☐

Personal ☐

Fanzines ☐

Use one space for each word. Only the words in this section will be printed.

Return with your
cheque to:
Reader Ads,
Amiga Shopper,
30 Monmouth
Street,
Bath,
Avon BA1 2BW

Unfortunately we cannot guarantee insertion in a particular issue.

I have read and understood the conditions for the inclusion of my ad.

Signature

spreadsheet program £7. ☎ 0509 210157

Supra modem 2400714 internal for Amiga A1500/2000 A-talk3 manuals leads boxed. 2 months old £130 ono Power computing pc880b dual 3.5" drive, blitz, no click no virus £120. ☎ 051 426 0138.

Seikosha sp 2400 mono 9 pln printer. Excellent cond. Under warranty three months old boxed. manuals cables Inc. £110 ono ☎ Hassan after 6pm Mon-Fri 081 9800434

A500 1 meg, A590, HD 2nd drive, optical mouse, star colour printer, 1804s monitor, more than £300 software, books etc. Full working order £450 ☎ 081 8833218 after 6pm

A500 with Checkmate expansion 2Mb, 2 disk drives plus a lot of software £350 ono ☎ 0438 740434

Checkmate A1500 expansion system for Amiga 500 £140 Nexus SCSI controller AD2000 £40 Disney Animation Studio £35 200w PSU for A500 £35 0322 667223 A590+ fitted with new 52Mb Quantum drive plus 2Mb RAM installed complete with manuals and software £339 ☎ evenings 081 683 4209

Back Issues Amiga Format £1 Amiga Computing 50p Amiga Shopper 30p or £20 the lot approx 29 issues p&p extra Contact Chris O'Dell 63 Manor Rd, Earls Barton, Northants.

KCS PC emulator board latest version 1 meg RAM, plus clock, 11MHz, VGA graphics, hard-disk support (and Amiga peripherals eg accelerator boards, mouse) with MS-DOS 4.01 £120 ☎ 0734 472010

A1500+ new and under warranty GVP 52Mb drive 3Mb RAM software inc. monkey 1&2, books, magazines, all boxed originals £900 ono No splitting call Angus Dawson 0939 250639/835 evenings.

SAS LATTICE C v5-106, Amiga C for beginners, Amiga C advanced, Mastering Amiga C, £110 AMOS + compiler, 3d, PD £30 Can do v1.5, Intro Pak £40 ☎ 091 2364723.

BT approved modem 1200/300 baud c/w cable £50 or action replay or WYH. Gordon 041 776 6755 after 4

Rombo "complete colour solution" video digitiser, boxed, unused, expansion - £20. ☎ Steven 091 270 2402 (ansaphone working hours).

XT bridge board with 5 1/4" drive £50 plus p&p 8362R8 Denise chip £10 3 1/2" internal floppy drive from Power Computing £30 for A500 or B2000 ☎ 040377 545 West Sussex.

Golem A500 40 meg fast h-drive, through port, cables and software still use RAM expansions and other with through port £250 ono 0263 720900

34 Paston Rd, Mundesley, Norwich, Norfolk, NR11 8BW

A1500 Wb2.0 68030/68882 combo 180Mb hard drives 5Mb 32-bit RAM 1 meg chip multisync monitor CBM flicker fixer, 2Mb HP compatible laser £2000 ono. ☎ Howard eves 071 7333047

Rendale 18020 genlock £70 Vidi Amiga £35. Vidi RGB £35, DVideo III £30 Shireko caption designer silky smooth only £70 788 12819 PC link £150 ☎ Bob 0438 728461

Amiga 2000 dual drive, 45 meg SCSI hard disk, cm8833 monitor 8 meg board 2 meg fitted £625 ono willing to sell items separately Simon 0362 697843 Norfolk after 5pm.

Amiga A500 1.3 ROM 1Mb Chip RAM, A590 with 2Mb, second 3 1/2" drive, X-cad, ProPage 2.1, Dffice, other "serious", games and PD £70 + cover disks £600 ono. ☎ 0633 874610.

B2000 2 x 3 1/2" disks wb 2.04, S Denise, mouse, 3 megs, Superpic 68030 accelerator + 68881 1084s monitor, Stereo Master, Wordsworth, DPaint 4, dos 2 dos, Qback tools, Digiview gold drt's Tiger cub £1280 will separate ☎ 040377 545

XT bridgeboard disk drive, disks, manuals etc with extra memory £80 1200 baud modem/phone £25. pet odds and ends, prices vary. ☎ Mick 0252 621033 after 6pm

Superbase Professional 4 - the best Amiga database currently available new, unregistered and complete with all manuals. rrp £411, will sell for £135 ono ☎ Gary on 0604 863191.

KCS power PC board inc MS-DOS (and manuals) gw-basic and full Instructions. £130. ☎ 0908 668117.

Superpic with Cabaret as new £300. Syntrox Editman Amiga control video editing system for Sony/Panasonic cost £589. bargain £325. Scala £100 ☎ 0709 587774 or 0742 397294

Amiga 1500/2000 GVP hd+8 SCSI controller 3.2 auto boot ROM populated 4Mb simms with manuals, 6 mth old new accelerator forces £210 ono. ☎ 0692 402927.

CSA 33Mhz Accelerator 512K SRam for A500/A1500/A2000 £295. Digiview Gold4 £50. Vidi Amiga & Vidi Chrome £40. Vidi RGB £30. Music-X 1.1 £35. All original, as new. Chris 0252 373177 (Farnborough)

Amiga B2000 Workbench 2.04. Flicker fixer, multisync monitor, other items Include GUP 40Mb hard disk, 8Mb RAM board 2Mb populated, modem, sampler, software, books. £700. For details ☎ 0252 837917

A500+ 2Meg disks manuals bundled games £300. GVP 52Mb 2Mb fast RAM £300. Philips CM8833M1 + stand £150. Control centre + Naksha mouse

£30. Original games software + mags disks available ☎ John Glover 0252 870079

Amiga A500 V1.3 Phillips CM8833 MKII monitor, external drive, 42Mb A590 + 2Mb, KCS powerboard plus business and leisure software, perfect condition £750. ☎ 0207 71029

At-once Plus 16Mhz 80286 IBM emulator board hardly used all instructions software £180 or with A1500 Phillips monitor Star printer £925. ☎ Steve 0489 789705 6-9 pm

Rendale A8802 Genlock with mode switch box £50 ono. ☎ 081-949 1614. Surrey

Microway Flicker Fixer, Brand new. Unused. Boxed. £90. ☎ Worthing (0903) 218266. Evenlgs best

Amiga B2000 Commodore 1084 monitor mouse and keyboard 1.3 RAM Fat Agnus £400. ☎ After 7 pm 0482 815625

Power! A500 Plus 2Mb, 1.3/2.0, CSA 33Mhz 68030 150 Mhz 68882, 100Mb HD, 2nd floppy + Cyclone, Vidi Digitiser, 1084s monitor, Genlock, printer, loadsa software, BL+M, will split, offers Simon 0803 812452

Supra modem 9600 Baud V.42bIs, MNPI-5, LAPMBTLZ up to 38,400 bps plug in and go. £390 ono. Contact Charles, 258 Marlborough Road, Swindon, Wilts, SN31NR. Includes postage registered with insurance

2Mb Fast RAM suitable for A590 fitting never used £50. Also Kindwords v.2.0 £25 Silent Service II £15. Champions of Krynin £10. All original discs. Wormley 0428 682439

Kawai K4 16 BIT Digital Synth. Immaculate wonderful sounds Bars and Pipes Professional sequencer software together with MIDI interface and mouse. Everything £650 ono. ☎ Ray 071-239 4561 day

A590 hard disk plus 2Mb, disks and manual, Excellent condition £190 ono 0883 713598

Yamaha P55-790 MIDI keyboard 100-AWM voices with effects and vector synthesis 61-mid sized keys, 8 drum pads, 8 track sequencer built-in stereo speakers with bass boost. £100 ono. ☎ 071-359 9508

Photon Paint2 £10. GFA basic plus compiler £40. ☎ 0582 864748 after 6.30 pm

GVPII 4Mb RAM 40Mb HD, Canon 9-pin printer, Commodore 1084 Egour monitor, Wordsworth, X-CAD3D-X-CAD designer, Digita accounts, diary, Proton paint 081-937 2416

Amiga 500 1Mb RAM external floppy drive. Voltmace zoomer analogue joystick. Workbench 1.3. Over £900 of software (mainly simulation and

strategy and RPGs) £285 the lot. ☎ Alex 071-476 8028

Amiga 1500, 1084S monitor, extra floppy drive, MIDI Interface, lots of titles Incl. Lattice C and games. Ref manuals 2 disk boxes - my whole set up. £750 ono. ☎ 0964 533392 eves.

Amiga 500 1Mb extra drive 1084 colour monitor, 1230 printer, mouse, joy sticks, all as new £600. ☎ 0509 890953

Amiga A500, A590 hard drive plus external drive, joystick, mouse with software £350. ☎ Mark 0223 290450

B2000/Macintosh 7Mb RAM, 2 floppy drives, flicker fixed NEC Multisync 3D monitor 40Mb QuantumHD, AmaxII Mac Emulator, stacks of Amiga, some Mac software, cost over £3,500, sell for £2,200 ono, 081-889 6304

Amiga 2000 with Commodore 1084 colour monitor 3 1/2 inch floppy 20Meg hard drive, mouse, joystick, software, games and manuals £550. ☎ 081 952 7400/0850 803309

2400 modem + leads, VGC, many features + Compuserve vouchers £100 ono. CBM MMPPPS1320 9PIN dot matrix printer + leads + 500 sheets paper £100 ono. ☎ 0494 449714

Supra RAM 500RX with 2Mb installed (expandable to 8Mb) for Amiga 500. Brand new and boxed. £105. ☎ Andrew Oldham on 0252 371887 evenings

Amiga 500, 1Mb upgrage 2 joysticks, 2 mice, Deluxe Paint II, Master sound plus 23 games worth over £600. All as new, bargain for £550. ☎ 081-692 1614

Amiga A500 3Mb, A590 20Mb H/D, twin floppy, Phillips 8833 colour monitor, Genlock, midi, mouse + mat, joystick control station, lots discs + original software £585. ☎ 0704 832221 after 5 pm

Amiga Vortex 40Mb hard drive, 1.5Mb upgrade midi Interface Musix two printers. Yamaha PSR80 keyboard. 20 games complete with manuals £600 ono. Chris Uxb 446521 evenings Uxb 251133 ext 3422 daytime

Amiga A500 plus GVP 52Mb HD, 1084s colour monitor, Rendale 8802 Genlock, range of PD software plus Wordsworth and Broadcast titler. £850 complete or will split. 0438 7400457 Stevenage

Amiga 500 (1Mb) complete with manuals, mouse, joystick and 2nd drive £230. K-Spread4 £60. Protex V5.5 £75. GFABasic V3.5 and compiler £35. 081 863 1386 evenings only

Blitzkrieg Battle at the Ardennes game for Amiga 1Mb, new unopened, £10 inc. p+p (3 available) RRP £26. Quickshot VII Joycard controller, new £5 inc p+p. T Day, 14 Robert Avenue, Somersham, Cambs, PE17 3EX

Cracking the Shell

Mark Smiddy concludes his two part guide to programming a perpetual calendar in AmigaDOS. This month: completing the calendar module

One of the most irritating features of AmigaDOS must be its low speed – and the calendar script is no exception. However, any operation always seems quicker if you can see something happening. For instance, when Workbench is busy, it displays a sprite (clock or ZZZZ bubble) to show it's working; hacks such as Sleepy 3 go further by animating the sprite. So, we'll be taking a look at creating a progress indicator for your calendar. As promised, this month's feature also includes the listings for a modified version of *Calendar* which will send an entire 12 month calendar to disk or printer. It also features slightly improved algorithms.

Long operations should have some form of progress indicator and this is the method chosen for *Calendar*'s display module, *Monthprint*. The script's progress is shown in the form of a bar traversing the screen from 0 to 100 per cent completed.

Progress indicators can be implemented in several ways – the choice of which method to use depends on how the script works. In linear scripts you update the indicator at strategic points, after a long copying operation for instance. Looping scripts are easier, you update once every loop. In such cases it is also much easier to determine the length of the progress bar because you can usually determine how many loops will be performed in advance. This is the method used by *Monthprint* – the length of the progress indicator is calculated from the number of days in the month.

HOW IT WORKS Monthprint

1. Prints a simple message to let you know what's going on.
2. Displays the fixed part of the progress indicator bar using string slicing. For the sake of illustration,

let's imagine the program was displaying a (purely hypothetical) seven day month. The variable "DiM" contains 8 (see last month's AmigaDOS column), so the printed result from this step looks like this. (The extra space is picked out with a period and the cursor position with an asterisk).

```
0%.—*—
```

3. Adds the second part of the progress indicator. Note how this line looks a little strange at first glance. It sends a line feed, adds some spaces and then stops ECHO from printing a line feed. The screen display now looks like this:

```
0%.—*— .100%
...*
```

As you can see, the cursor has been moved to the first position in the progress indicator, just below the first bar. This explains the strange use of "*" and NOLINE switch.

4. Defines a loop label "loop" which is accessed by the backward jump at 20. The loop is defined as early as is practical in the script to help speed things up. When jumping backwards, the SKIP command starts at the beginning of the program and works its way down. If you must jump backwards, keep the labels early on.

5. In BASIC this line reads:

```
IF DiM > daynum
```

This tests to see whether the value in "DiM" (days in month) has exceeded the value in "daynum" and branches accordingly. The variable daynum is initialised to "1" in the *Calendar* script detailed last month.

6. This calculates the value held in the global environment variable "wrap" which is used later to determine when to wrap the display. The variable "wrap" (explained in last month's installment) is calculated each loop to contain a value between 0 and 6 – the offset of the current date in the week. The calculation uses a technique which is not available in AmigaDOS 1.3 since it writes directly to the variable being used. In early versions, EVAL opens a file to the variable and keeps it open until the command has completed. Since you cannot write to a file which is open for reading, this was not possible. Assuming "wrap" contains 5, AmigaDOS treats this line thus:

```
EVAL {5 +1} mod 7 to ENV:wrap
```

The file containing the variable is opened, read and closed, while the line is being parsed.

When EVAL gets round to executing it sees the variable just as if it had been typed.

7. In BASIC this line could be written:

LISTING: MONTHPRINT

```
1. echo "Calendar working... wait"
2. echo "0% —————" first=1 len=$DiM noline
3. echo "-- 100%*n " noline
4. lab loop
5. if val $DiM GT $daynum
6. eval ( $wrap +1) mod 7 to env:wrap
7. if val $daynum NGT GT 9
8. echo >>T:Mfile " " NOLINE
9. endif
10. if val $wrap NOT GT 1
11. echo >>T:Mfile "**e[32m$daynum*e[31m" "**e[I" noline
12. else
13. echo >>T:Mfile $daynum "**e[I" noline
14. endif
15. eval $daynum + 1 to env:daynum
16. if $wrap eq 0
17. echo >>T:Mfile ""
18. endif
19. echo "**e[41m *e[40m" noline
20. skip loop back
21. endif
22. echo >>T:Mfile .\
    "**n=====
23. more T:Mfile
24. resident eval remove
25. endcli
```

IF daynum <= 9

The test determines if the value stored in "daynum" is less than or equal to 9. If the test is positive, control branches to Step 9, otherwise it continues...

8. ...here where a single space is added to the print file, "MFile". (Mfile was created by Calendar and described in last month's installment).

This handles the character alignment by making sure all the numbers line up neatly. Since all the numbers appear at regular tab stops (accomplished with the string *e[1]), single digits line up over the tens column, viz:

```
1      1
8      8
15     15
```

You may exclude Steps 7 to 9 if you wish.

9. Closes the IF/ENDIF construct opened at Step 7.

10. Tests if the value of "wrap" is less than equal to 1. (These values occur when the day is a Saturday or Sunday). If it is, control continues at Step 11 otherwise it branches to Step 12.

11. Control reaches here if the date displayed falls on a weekend.

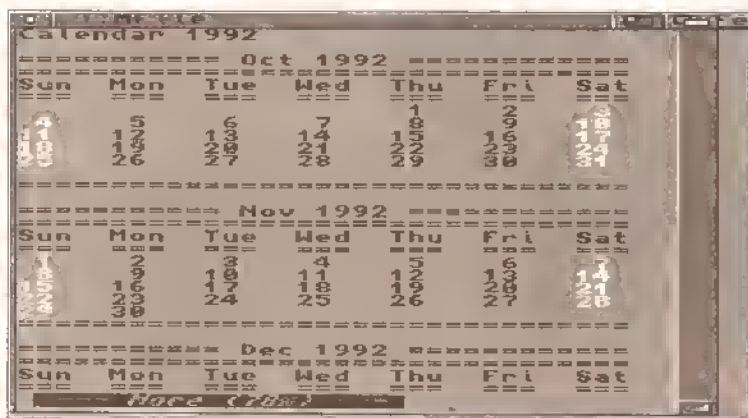
This exception is highlighted by adding control characters to the output string: *e[32m turns printed output white and *e[31m puts it back to normal. See Step 13 for more info.

12. If control reaches here from Step 11 it branches to Step 14 otherwise it continues...

13. ...here, where it prints the next

construct opened at Step 1D.

15. Increments the variable "daynum" using the direct write technique described at Step 6.



With a couple of months to a view on the perpetual calendar, you'll never be left wondering what day it is again

day number. A couple of things are worth noting here. First the output is sent to file for later display, but second two separate items are being printed. There's nothing unusual in that, but look at how this is achieved:

```
echo >>T:MFile $daynum \
"*e[1" noline
```

ECHO is receiving two print arguments (\$daynum and *e[1]) Instead of the more usual one. This is a unique feature of AmigaDOS 2 and cannot be used in earlier versions. In fact, you can send as many arguments as you like, switches such as NOLINE should be added to the end for clarity.

14. Closes the IF/ELSE/ENDIF



A progress monitor is just the thing for whiling away the time as the calendar calculates the dates and the days. Here, as you see, the job is nearly done

16. Checks if the value held in "wrap" is zero. If it is, control resumes at Step 17 otherwise it jumps to Step 18.

17. Adds a new line to the print file "MFile".

18. Closes the IF/ELSE/ENDIF construct opened at Step 16.

19. This displays the progress meter block for the current loop. Note this is echoed directly to the current console screen and not sent to file.

20. Jumps back to Step 4 for another bite at the cherry.

21. Closes the IF/ELSE/ENDIF construct opened at Step 5. Control reaches here when the entire month has been sent to the print file.

22. Appends the bottom "ruler" to the print file...

23. ...which is finally displayed here using MORE. Note that since MORE is not RUN-launched it uses the current Shell window for display. This also clears the progress indicator.

24. This removes EVAL from the resident list since it is no longer required...

25. ...and closes the Shell process opened by Calendar.

HOW IT WORKS Supercal

Supercal is the main module for Calendar2, the whole year calendar. For the sake of speed, it operates as a separate module which calls modified versions of Calendar and Monthprint.

1. Define the key for this command. You must specify a year for this script and optionally a starting month. For instance you might only want the calendar from August 1992. Note however, both these arguments are numeric.

2. Just in case you don't supply a month, Supercal assumes you mean January - this will normally be the

case since Supercal is designed to display whole year calendars.

3. This checks whether or not the Calendar variable has been set - this is used to check for certain once only configuration. If Calendar exists control branches to Step 7, otherwise execution continues...

4. ...here, where the Calendar variable is defined.

5. Adds EVAL command to resident list - this used to be done in Calendar, but since this is now a subroutine, it is done here.

6. Creates the print file and defines its heading with the current year.

7. Closes the IF/ENDIF construct opened at Step 3.

8. Defines a global environmental variable MN and gives it the value of the current month.

9. Prints a simple progress message in the current console window. This is the working window that Supercal was launched from.

10. Executes Calendar2 (which is listed on the following page) with

continued on page 125

LISTING: SUPERCAL

```
1. .key Year/A,Month
2. .def Month 1
3. if *$Calendar EQ $Calendar
4. setenv Calendar ON
5. resident c:eval add
6. echo >T:MFile "Calendar <Year>"
7. endif
8. setenv MN <Month>
9. echo "Working on $MN/<Year>"
10. execute s:Calendar2 <Year> $MN
11. eval $MN + 1 to ENV:MN
12. if val $MN NOT GT 12
13. execute s:Supercal <Year> $MN
14. endif
15. more T:MFile
16. resident eval remove
17. copy T:MFile to S:Calendar<Year>
18. echo "Calendar saved to disk as Calendar<Year>I*nSee \
magazine for info on how to print this."
19. quit
```


**GORDON
HARWOOD
HARWOOD
HARWOOD**
Computers

OMEGA PROJECTS

(EUROPE) LTD

OMEGA HOUSE
83 RAILWAY ROAD
LEIGH
LANCS, WN7 4AD

HARDWARE SALES ONLY	0942	682203
HARDWARE SALES ONLY	0942	682204
SOFTWARE SALES ONLY	0942	682205
QUERIES & FAX	0942	682206

ALL CHEQUES, P.O.,
ETC SHOULD BE MADE
PAYABLE TO OMEGA
PROJECTS LTD. WE
ALSO TAKE ACCESS,
VISA, MASTERCARD
& EUROCARD

ALL PRICES INCLUDE VAT

SOUND ENHANCER

IF NOT SATISFIED WITH THIS PRODUCT SIMPLY RETURN FOR A NO QUIBBLE REFUND. THIS IS HOW SURE WE ARE THAT YOU WILL BE MORE THAN IMPRESSED. YOU'VE GOT TO HEAR IT TO BELIEVE IT.

100% COMPATIBLE
WITH ALL SOFTWARE

PLUS
39.95

NOW WITH BASS
ENHANCEMENT

IF YOU THOUGHT THAT THE AMIGA SOUND WAS GOOD THEN YOU ARE IN FOR A REAL SHOCK, AS YOU CAN ENHANCE THE SOUND TO NEW HEIGHTS WITH THE BRAND NEW RELEASE FROM OMEGA PROJECTS: LOOK OUT FOR THE REVIEWS

KICKSWITCH ROM SWITCHER

DOES NOT REQUIRE MACHINE TO BE SWITCHED OFF TO SWAP ROMS

- | | |
|----------------------------|---------------------|
| 1. RIBBON CABLE MOUNTED | 24.95 (Bare) |
| 2. WORKS WITH ACCELERATORS | 44.95 (Inc 1.3 Rom) |
| 3. AUDIBLE SWITCH OVER | 49.95 (inc 2 x Rom) |
| 4. EASY INSTALLATION | Save 5.00 on |
| 5. FULLY AUTOMATIC | last months prices |

150/250Meg SCSI TAPE STREAMER

The ULTIMATE back-up device

INTERNAL	449.95	AMIGA DOS 2.0 COMPATIBLE
EXTERNAL	549.95	

OFFICIAL UK 2.04 ROM KIT
NOW IN STOCK
79.95

CSA ROCKET LAUNCHER

A BRAND NEW PRODUCT to enable people that own the Commodore A2630 Accelerator to increase its speed to a full 50MHz while retaining full original compatibility. So don't even think about swapping your original card for a faster one until you have seen the ROCKET LAUNCHER.

595.00

TURBO CHARGE YOUR CBM
A2630 ACCELERATOR

AMI-BACK

The WORLDS fastest, most reliable hard disk back-up utility available for the AMIGA. Backs up to 4 floppy drives (not 2 like the competitors) or to TAPE STREAMER without the need for additional software, has a built-in SCHEDULER, selective back-up, or Disk Image. Guaranteed, better than any other on the market.

V2.0 **49.95** AMIGA DOS 2.0
COMPATIBLE

GVP

IMPACT 500 HARD DRIVE
Expandable to 8 Meg ram

52Meg 379.95
105Meg 499.95

ADD 50.00 PER 2 Meg
IF ORDERED AT SAME
TIME AS DRIVE.

AMIGA A600 & A600/HD

This latest addition to the Amiga range of home computers is the ideal solution for those of you on the move, due to its size & internal TV Modulator. Comes complete with 1 meg ram, Mouse, PSU, 20 Megabyte internal Hard Drive (A600/HD).

1 YEAR ON-SITE WARRANTY FREE

A600	339.95
A600/HD	439.95

BARE SCSI and IDE DRIVES

Quantum	52Meg	199.95
Quantum	105Meg	329.95
Quantum	170Meg	449.95
Quantum	210Meg	639.95
Fujitsu	44 Meg	179.95
DEC	850 Meg	1299.95
SCSI Case.	inc PSU	109.95

SYQUEST REMOVEABLE HARD DRIVES

44Meg inc. cartridge	399.95
88Meg inc. cartridge	499.95

GVP SERIES II 68030 COMBO CARD

This affordable ACCELERATOR CARD for the A1500/2000 gives your Amiga a new outlook on processing. Complete with CO-PRO, 32 BIT RAM, and SCSI HARD DISK controller.

Allowing transfers in excess of 1.2meg/sec

25Mhz + 1Meg 32 bit ram	599.95
40Mhz + 4meg 32 bit ram	949.95
50Mhz + 4meg 32 bit ram	1499.95

ICD

Flicker Free Video 2

199.95

Inc MULTI-SYNC

499.95

SUPRA RAM 500 RX

External memory expansion for Amiga 500 & 500 Plus. Adds up to 8 meg.

1 Meg	119.95	4 Meg	199.95
2 Meg	149.95	8 Meg	349.95

TRUMPCARD AT PROFESSIONAL HARD DRIVE SYSTEMS

A500 44MEG	299.95
A500 105MEG	399.95

PLUS UP TO 8 MEG RAM

SUPER CARD-AMI II

THE ULTIMATE & GENUINE DISK
DUPLICATOR. FULL UK SUPPORT
& UK USER GROUP SET UP

A5DD **34.95** A15DD/200D

GVP A530

52 Meg	699.99
120 Meg	849.99
240 Meg	1039.99

NOW IN STOCK

GVP SERIES 2 (A1500/2000) SCSI + UP TO 8 Meg of Ram

52Meg	299.95
105Meg	399.95

ADD 50.00 PER 2 meg
IF ORDERED AT SAME TIME

200 WATT PSU

COMPLETE WITH A500 POWER
CABLE & OPTIONAL HARD DRIVE
POWER LEAD

READY TO PLUG
IN AND GO **79.95** FAN COOLED

CSA MEGA-MIDGET RACER

The UKs biggest selling ACCELERATOR card. For the A500/2000. Offering a modular design allowing you to buy what you can afford then expand later. Up to 38Mhz CPU + 50Mhz Co-pro + 8 Meg 32bit ram + 512K Shadow (STATIC) ram.

68030 accelerator 25, 33, 38 Mhz
Co-Processor socket for 68882 up to 50 Mhz
68000 socket on board for FALLBACK compatibility
Gives you more power than the A3000
Optional DRAM expansion up to 8Meg 32 bit ram
Fits INSIDE A500/1500/2000 easily and quickly
Creates a monster machine for progs like FALCON etc
Cuts Ray Tracing times 30x - 60x for SCULPT etc
Speeds up screen refresh and overall performance
Lowest price 68030 THAT WORKS!!!!

As the ONLY OFFICIAL DISTRIBUTORS for CSA we offer a 50% buy back policy. This means that if you upgrade you won't be stuck with anything.

25mhz EC68030	349.95
33Mhz EC68030	449.95
25Mhz MC68030	449.95
33Mhz MC68030	549.95
25MhzEC + 68882	499.95
33MhzEC + 68882	599.95
STATIC RAM (512K)	99.95
2Meg 32Bit ram	219.95
4Meg 32Bit ram	399.95
8Meg 32Bit ram	599.95
25/25 + SRAM + 2Meg	749.95
33/33 + SRAM + 2Meg	879.95

A500 Replacement Internal Drive	49.00
A1500/2000 Internal Drives	54.95
A590 CMOS RAM Chips (512K)	19.95
1.3 ROMS	29.95
2.04 ROMS	39.95
1 Meg x 8 SIMMS (2 Meg) 80ns	69.95
4 Meg x 8 SIMMS (8 Meg) 80ns	179.95
Sound Trap 3 Sampler	29.95
Mini Mid Interface	19.95
3.5" External Drive (Cumana)	54.95
Upgrade Mouse	18.00

CSA 40/4 MAGNUM

68040 25Mhz
HIGH SPEED SERIAL PORT
HIGH SPEED PARALLEL PORT
4 MEG RAM (standard)
EXPANDABLE TO 65 Meg RAM
HIGH SPEED SCSI 1 & 2 CONT
CALL FOR MORE INFO

1699.95

YOU GET WHAT YOU PAY FOR

50MHz CBM A2630

Complete ACCELERATOR system with 4Meg 32 Bit Ram for the A1500/2000, comprising a FULL version 68030 CPU & 68882 Maths Co-Pro. Expandable to 112 Megabytes of true 32 Bit Ram with optional DKB A2632 Expansion board. Call for other pricing.

1279.95

DKB 2632

32 Bit Memory Expansion for the Amiga A2630 Card
Now you can go beyond 4 Megabytes of 32 Bit Ram on your A2630 Accelerator - The DKB 2632 allows you to expand to 112 MEGABYTES

BARE OK	299.95	32Meg	1399.95
4Meg	449.95	64Meg	2499.95
8Meg	599.95		
16Meg	849.95		

INFORMATION SHEET
AVAILABLE

continued from page 122
the correct parameters.

11. Increments the month number.

12. Tests if the whole year (up to December has been done). If it has, execution branches to Step 14 otherwise it continues...

13. ...here, which calls *Supercal* itself recursively. This has been done in preference to using RUN because that would cause more than one occurrence of *Calendar2* to execute at once and that cannot happen.

Using EXECUTE on its own does not work because this script contains a backward loop and the temporary command file required by the SKIP

command is trashed by the second EXECUTE running from the same process.

(Phew!) Don't worry, it just works that way.

14. Closes the IF/ENDIF construct opened at 12.

15. Displays the completed calendar.

16. Removes EVAL from the resident list since we've finished with it.

17. Makes a copy of the print file in your S: assignment...

18. ...and lets you know for future reference. This is the print file. You

can make your own calendar by copying this to your printer thus:

COPY S:Calendar1992 to PRT:

19. Purges the *Calendar* variable from the system.

32. \$Day is now multiplied by 5 to account for new spacing.

37. A new variable has been added here to aid the multi-tasking. "Breakme" is set to the current process number running *Calendar2*.

LISTING: CALENDAR2

```
1. .key year/a,month
2. .bra {
3. .ket }
4. .dollar !
5. set M {month}
6. set Y {year}
7. eval $Y-1 to env:Date
8. eval $M-1 to env:month
9. echo "$Date" first=1 len=2 to env:Cent
10. echo "$Date" len=2 to env:decade
11. eval (799+ $decade+($decade/4)+($cent/4)-(2* $cent)) %
mod 7 to env:day
12. eval (($cent+1)+$Y) mod 4 to env:leap
13. if val $leap NOT EQ 0
14. eval $month * 3 +2 to env:slice
15. echo " 31 28 31 30 31 30 31 31 30 31 30 31" %
first=$slice len=2 to env:DIM
16. eval $month * 4 +2 to env:slice
17. echo " 00 31 59 90 120 151 181 212 243 273 304 334" %
first=$slice len=3 to env:Elapsed
18. else
19. eval $month * 3 +2 to env:slice
20. echo " 31 29 31 30 31 30 31 31 30 31 30 31" %
first=$slice len=2 to env:DIM
21. eval $month * 4 +2 to env:slice
22. echo " 00 31 60 91 121 152 182 213 244 274 305 335" %
first=$slice len=3 to env:Elapsed
23. endif
24. eval $month * 4 +2 to env:slice
25. echo >ENV:MName " Jan Feb Mar Apr May Jun Jul Aug Sep %
Oct Nov Dec" first=$slice len=3 noline
26. echo >>T:MFile "***** $MName $Y *****"
27. echo >>T:MFile "*****"
28. echo >>T:MFile "Sun Mon Tue Wed Thu Fri Sat"
29. echo >>T:MFile "=== === === === === ==="
30. eval $day to env:wrap
31. eval ( $Elapsed + $Day ) mod 7 to env:Day
32. eval $day * 5 to env:space
33. echo >>T:MFile " " first=1 len=$space %
noline
34. setenv daynum 1
35. eval $DIM + 1 to env:DiM
36. eval $day to env:wrap
37. setenv BreakMe $process
38. newsHELL from s:MonthPrint2 con:0/0/360/50/Calendar/Auto
39. wait >NIL: 20 mins
```

LISTING: MONTHPRINT 2

```
1. echo "Calendar Working on $MName $Y. Please wait"
2. echo "0% " first=1 len=$DiM noline
3. echo "~ 100%*n " noline
4. lab loop
5. if val $DIM GT $daynum
6. eval ( $wrap +1) mod 7 to env:wrap
7. if val $daynum NOT GT 9
8. echo >>T:MFile " " noline
9. endif
10. if val $wrap NOT GT 1
11. echo >>T:MFile "e[32m$daynum*e[31m" " " noline
12. else
13. echo >>T:MFile $daynum " " noline
14. endif
15. eval $daynum + 1 to env:daynum
16. if $wrap eq 0
17. echo >>T:MFile ""
18. endif
19. echo "e[41m *e[40m" noline
20. skip loop back
21. endif
22. echo >>T:MFile "n=====
23. break $BreakMe C
24. endcli
```

20. Finally, this line makes certain that no recursive copies of the script are left to execute.

HOW IT WORKS Calendar2

Last month we had a slightly different version of this listing. This modified version is new and improved.

There are only a few changes between this version and the one listed last month. Follow them through to see how the code has been improved (line numbers refer to this version):

25. The month string is now written to a global environmental variable.

26-29. Tabs removed and other cosmetic improvements.

38. NEWSHELL calls a different file and the window has been made smaller.

39. An extra line forces the script to wait until the *Monthprint2* process is completed. Redirection to NIL: is used to stop the "****Break" message appearing.

HOW IT WORKS Monthprint2

The following changes have been made to *Monthprint*:

1. Cosmetic change to be more informative.

11 & 13. Tabs replaced by spaces.

23. Signals to *Calendar2* it is safe to continue by breaking the wait state.

GOTTA PROBLEM?

If you get stuck with AmigaDOS or there is anything specific you would like to see covered here, drop a line detailing your conundrum to: Mark Smiddy, *Amiga Shopper*, 3D Monmouth Street, BATH BA1 2BW. Sorry, no personal correspondence can be entered into. You can EMAIL Mark Smiddy on CIX @ "SMIOOID".

LISTINGS LISTINGS

THIS MONTH: SENDING CONTROL CODES TO YOUR PRINTER

Now here's a darn interesting program. It's an assembly language utility that sits between a printer driver and printer, and enables users to make use of their own printer's facilities.

We often get letters from people asking if there are printer drivers available for particular models to make use of special features, and as often as not the answer is 'no'.

Printerceptor, by Jason Dolg of Kinghorn in Fife, changes all that. Run it from your startup-sequence and you can embed printer control commands in any text file from any

We want your listings! Display your programming prowess before your fellow Amigans and earn fame, fortune and everything that goes with it (£20)

word processor, and get the printer to execute them as you would expect.

What is more, the commands are not expressed as a series of escape codes, but as user-definable names. These must be put into the

text file, preceded by two left parenthesis '('. A translation file must be present in your s directory, listing all of the commands and the sequence of hexadecimal codes which they represent.

Thanks for your submission,

Jason. Your cheque's in the post.

As always, we're interested in submissions in any language, but we can't print programs that rely on binary files.

Pop your program on an AmigaDOS disk (along with source code if it is compiled or assembled) and send it to:

Listings

Amiga Shopper

Future Publishing

30 Monmouth Street

Bath

BA1 2BW

Include an SAE if you want your disk returning. **AS**

```
; Printerceptor
Install
    move.l 4,a6
    move.l #dosnam,a1
    move.l #0,d0
    jsr -552(a6) ; Open dos

library
    move.l d0,a6
    move.l #filnam,d1
    move.l #1005,d2
    jsr -30(a6) ; Open

script file
    tst.l d0
    beq cdos ; No script?

Time to leave!
    move.l d0,file
    move.l #-1,d2
    move.l #1,d3
    move.l d0,d1

    jsr -66(a6)
    move.l #0,d2
    move.l #-1,d3
    move.l file,d1
    jsr -66(a6)

    add.l #1,d0
    move.l d0,d7
    move.l a6,dos
    move.l 4,a6
    move.l #1,d1

    jsr -198(a6)
    tst.l d0
    beq dae
    move.l dos,s6
    move.l d0,a5
    move.l d7,d3
    move.l d0,d2
    move.l file,d1
    move.l d7,fsize
```

These two seek calls are used to find out how long the script file is

This call reserves some memory so the script can be read from its file and stored internally. A check is made to ensure enough memory is available

```
jsr -42(a6) ;
Load the file
    move.l file,d1
    jsr -36(a6)
    move.l d7,d6
    sub.l #1,d6

    move.w #0,d7
    move.l a5,a0
    move.b (a0)+,d0
    sub.l #1,d6
    bmi ccend
    cmp.b #10,d0
    beq ccend
    cmp.w #32,d0
    bne l1
    cmp.b #10,(a0)
    beq error2
    fnl move.b (a0)+,d0
    sub.l #1,d6
    bmi ccend
    cmp.b #10,d0
    beq nexlin
    cmp.b #48,d0
    blt error2
    cmp.b #$66,d0
    bgt error2
    cmp.b #58,d0
    blt in
    cmp.b #$61,d0
    blt error2
    in bra fnl
    nexlin add.w #1,d7
    bra l1
    ccend tst.w d7
    beq error2
    move.w d7,d0
    mulu #24,d0
    move.l #$10001,d1
    move.l 4,a6
    jsr -198(s6) ; Reserve
```

This next section does a quick syntax check on the script and counts the commands. Any errors in the script and the program will terminate and report an error

```
some memory for
    tst.l d0 ; the
command table
    beq dae
    move.l d0,table

    sub.w #1,d7
    move.w d7,d6
    move.l #hexdec,a3
    move.l d0,a0
    move.l a5,a1
    sloop move.l a0,a2
    move.w #0,d5
    mloop move.b (a1)+,d0
    cmp.b #32,d0
    beq num
    move.b d0,(a2)+
    add.w #1,d5
    cmp.w #15,d5
    blt mloop
    fsp cmp.b #32,(a1)+
    bne fsp
    num move.w #0,d4
    lea 16(a0),s2
    loop2 move.b (a1)+,d0
    cmp.b #10,d0
    beq exit
    move.b (a1)+,d1
    cmp.b #10,d1
    beq error
    and.w #31,d0
    and.w #31,d1
    move.b (a3,d0),d0
    move.b (a3,d1),d1
    lsl.b #4,d0
    or.b d1,d0
    move.b d0,(a2)+
    add.w #1,d4
    cmp.w #7,d4
    blt loop2
    exit move.b #$ff,(a2)+
```

This next part is the script parsing routine. It converts the script into a format more readily understandable by the program (hence less so by people). Once in this format the script can be cross-referenced much more quickly (see the script panel on the next page for more details). At this time each of the commands are checked to ensure their names are long enough

THE SCRIPT FILE

Printerceptor needs a script file called *PrintCommands* which must be stored in the *s* directory of your boot disk.

When a text file comes to be printed, *Printerceptor* will scan it for any embedded print commands. These are denoted by two open parentheses "(" followed by the command name. The command names can be chosen by the user. The script file acts as a dictionary: each time a command is found in a text file, *Printerceptor* looks it up in the script file and replaces it in the output to the printer with its corresponding hexadecimal codes.

Each command in the script must be on a separate line, with no blanks. First on the line must come the command name, which can contain any characters. *Printerceptor* is case-sensitive, and only takes notice of the first fifteen characters. Then follows a single space, and the hex codes for the printer to execute the command. The command name, plus the two brackets which precede it in a text file to be printed, must be longer than or the same length as the code sequence, otherwise an error will be generated. This will also happen if the hex string contains non hex or an odd number of characters. Hex letters must be lower case.

A blank line signals the end of the file (it's not necessary, but it is useful for adding a comment).

Below is an example script for the Star LC24-200. Users should create their own script files with reference to their printer manuals.

```
Center 1b6131
Just 1b6133
Left 1b6130
LQ 1b7831
Times 1b6b00
Sanserif 1b6b01
Courier 1b6b02
Prestige 1b6b03
Script 1b6b04
Italic 1b34
Upright 1b35
Emph 1b45
Noemph 1b46
Dubstr 1b47
Nodubstr 1b48
Underlin 1b2d31
Stpundlin 1b2d30
Outline 1b7131
Outshad 1b7133
Super 1b5330
Sub 1b5331
Cancscript 1b54
Pica 1b50
Elite 1b4d
Semicon 1b67
Condense 1b0f
Nocond 12
Width 1c45
Prop 1b7031
Fixed 1b7030
Size 1b68
Right 1b6132
Draft 1b7830
Shadow 1b7132
Norm 1b7130
```

```
add.w #2,d5
cmp.w d4,d5
blt error
add.l #24,a0
dbf d6,sloop
move.w d7,commands
```

Now the Initialisation has been performed, we can set up the program for action. This part of the program is known as the 'wedge', since it slots between the printer driver and the printer device

```
move.l 4,a6
move.l #devnam,a0
lea ioreq,a1
clr.l d1
clr.l d0
jsr -444(a6)
tst.l d0
bmi dae
lea ioreq,a1
move.l 20(a1),a4
move.l -$1c(a4),j+2
move.l #end-start,d0
move.l #1,d1
jsr -198(a6)
tst.l d0
beq dae
move.l d0,a0
move.l #start,a1
move.l #(end-start)/4,d1
I11 move.l (a1)+,(a0)+
dbf d1,I11
move.l d0,-$1c(a4)
lea ioreq,a1
jsr -450(a6)
```

dae bsr dafil
cdos move.l dos,a1
move.l 4,a6
jsr -414(a6)
out
rts
error bsr datab
error2 bsr dafil

All finished! All we have to do now is close up and return

```
move.l dos,a6
jsr -60(a6)
move.l d0,d7
move.l d0,d1
move.l #erstr,d2
move.l #enstr-
```

The error handling routine. Only one error message is given, although it can be generated by different circumstances. There are two entry points for the routine, depending on the cause of the error

```
erstr,d3
jsr -48(a6)
bra cdos
dafil move.l a5,a1
move.l fsize,d0
move.l 4,a6
jsr -210(a6)
rts
datab move.l table,a1
move.l tsize,d0
move.l 4,a6
jsr -210(a6)
rts
```

All code between the labels 'start' and 'end' is part of the wedge, and must be PC Relative

```
start
movem.l a0-a6/d0-d7,-(a7)
```

The following four lines have been documented out. They check if it is the printer device using the port. They were taken out in case a program used its own printer driver. They are only really necessary if you have another output device on the port

```
* move.l 14(a1),a0
* move.l 10(a0),a0
* cmp.l #'prin',(a0)
```

```
* bne out2
move.w 38(a1),d7
sub.w #3,d7
bmi out2
move.l 40(a1),a0
move.l a0,a2
loop cmp.b #'(',(a0)
beq maybe
not move.b (a0)+,(a2)+
not2 dbf d7,loop
move.b (a0)+,(a2)+
move.b (a0)+,(a2)+
sub.l a2,a0
move.l a0,d0
sub.l d0,36(a1)
out2 movem.l (a7)+,a0-a6/d0-d7
j jmp 0
maybe cmp.b #'(',1(a0)
bne not
move.l table(pc),a5
move.w commands(pc),d0
```

```
bcc1 move.l a5,a4
lea 2(a0),a3
ccl cmp.b (a4)+,(a3)+
bne ntc
tst.b (a4)
bne ccl1
move.l a3,a0
lea 16(a5),a4
fcc1 move.b (a4)+,(a2)+
cmp.b #255,(a4)
bne fcc1
bra not2
```

```
ntc
add.l #24,a5
dbf d0,bcc1
bra not
table dc.l 0
commands dc.w 0
end
fsize dc.l 0
tsize dc.l 0
file dc.l 0
dos dc.l 0
devnam dc.b "parallel.device",0
```

Change the text above in quotes to 'serial.device' if your printer is connected to the serial port

```
EVEN
dosnam dc.b "dos.library",0
EVEN
erstr dc.b 10,$9b,"1;33;40mAwooga,
Awooga!", $9b,"0;31;40m",10,10
dc.b "Error in script file
format. Printerceptor installation
terminated.",10
dc.b "Please check file and
retry.",10,10
enstr
EVEN
filnam dc.b "s:PrintCommands",0
EVEN
hexdec dc.b 0,10,11,12,13,14,15,0
dc.l 0,0
dc.b 0,1,2,3,4,5,6,7
dc.b 8,9,0,0,0,0,0,0
ioreq dc.b.w 24,0
```



SOFTWARE FOR FREE

Allo, boozers. Oh. Sorry, wrong magazine. Here we are again, getting to grips with the latest in PD, shareware and licenseware for the Amiga. As I sit here, looking at the piles of disks on the floor around my desk, I have to say that things have been getting sparser over the last few months. I don't know whether that's because fewer people are sending me stuff to review, but it seems to me that there is genuinely less freely-distributable software

about. Disk magazines seem to be thriving – see later for reviews of a couple of the latest – and I'm getting a fair few letters from UK software authors who want me to take a look at their latest offerings. But, by and large, the PD scene just ain't what it was. So, if you've any shareware lurking about that you use but haven't bothered sending off the fee for, think about it: perhaps you, in your own small way, are contributing to the reduction in new programs. Get the chequebook out now!

Ian Wrigley rounds up what must be the most diverse collection of PD ever. From fractals to harpsichord recitals to discovering the secrets of the ancient runes, there's sure to be something here to suit all tastes. PLUS: all the latest disk mags

BEGINNERS

What is PD?

PD is a general term which many people incorrectly use to refer to all freely-distributable software. In fact, PD (which stands for Public Domain) software is only one branch of this area; the other main one is shareware.

Essentially, PD software may be copied and used by anyone, although some authors place restrictions such as not allowing a PD library to charge more than a certain amount for the disk.

Shareware, on the other hand, should be treated more like commercial software.

Although you are allowed to copy and pass around shareware programs, if you like one then you should pay the requested fee to the author – it's normally only £15 or less, and often entitles you to an upgraded version or a printed manual.

Paying your shareware fees

BEGINNERS START HERE

BEGINNERS

encourages software authors to write more

programs – and if they don't, the Amiga scene will be a poorer place.

Can I pass other people copies of PD?

Yes – that's the way that it gets to a wide audience. Just make sure that you have followed the author's requirements for distribution – normally that you don't charge more than a certain amount for the disk, or that you make sure that all the documentation is included on the disk.

You can also pass on shareware – but not any registered copies of programs. If, when you pay your shareware fee, the author sends you an improved version of the program, then be careful not to give that out. You should only pass on unregistered shareware.

FRACSCAPE

Various PD libraries

First off this month is *Fracscape*, a PD fractal landscape generator by Lee Bull, which was written in Amos and compiled using the Amos compiler.

Lee says "I think it is better than any others currently in the public domain" – brave words!

The disk contains, according to the documentation, just one section of a full landscape design, generation and modelling package

which may be released into the public domain at some stage in the future. Until then, all we have is the 3D modelling section.

The package was apparently written as an A-level project that took three weeks to complete – a pretty damned impressive feat.

Lee is now studying for a degree in computer science, but he can't be a total propellerhead: one of his doc files has the worthy suggestion: "If

continued on page 130

RATING THE PROGRAMS

Just to be awkward, I rate the software that I review in two different ways, depending on what it is. Disk magazines, collections of clip art and the like are given a 'value for money' rating, since you're paying for one thing on the entire disk. Single programs which appear in a collection of others, or programs which I've downloaded from bulletin boards, are given a 'program rating', which reflects how good I think they are, taking into account usability, bug-proofness and so on. Both ratings are out of a maximum possible 10.

For a fast, reliable but foremost friendly service.



AMIGA PD

1-9 disks £1.20
10 - 15 disks 99p
15+ 90p

FREE PROGRAMS

Order 10 get 1 FREE

Order 20 get 2 FREE

Order 25 get 3 FREE

061 370 9115

No minimum order.

All orders sent out

the same day.

AMOS

APD014 IFF Pics No1 (Brill) +
APD031 Screen Designer +
APD101 Auto Player V1.10 +
APD205 RDraw V1.48 +
APD303 Litter Busters +
APD329 Fruit Machine II +
APD333 American Football
APD366 Chain Reaction
APD373 Compiler 1.34

UTILITIES

UT124 Amateur Radio
(27 Disks)
UT300 IFF 2 PCX+
UT302 Business Date 5
UT304 DCopy 3
UT310 Powerbase V2+
UT320 AG4 Package (2)
UT327 VideoPack (2) +
UT331 Video + Animation +
UT328 Printer Drivers 3+

GAMES

GA086 Assassins 1-24+
GA219 Total War
GA226 Bounce 'N' Blast
GA251 Technoban (Brill)+
GA253 Yum Yum +
GA255 Cosmic Racer+
GA264 Atlantis +
GA266 Super Cars 2
GA271 Solid Quad

MUSIC

MU017 Digital Concert
(2 to 6)
MU025 Star Trekker
MU058/6 Treacher V2.00
MU067 Amigadens
MU072 Mozarts Flute
Concerto
MU077 Puma Tracker (Brill)
MU058 Mozart (2 Disks)
MU054 EFX Music Creator

GRAPHICS

001 M-Cad
003 Print Studio +
005 Clip-Art 1 to 13 +
Original sel uncut
024 Colour Fonts (5 disks)+
028 Walt Disney Clip-art+
033 Graphics Utils +

BUSINESS

BU004 Clerk (Brill) +
BU005 Genealogy +
Bankin' +
BU016 Text Plus V3.00+
BU019 Analytical V2.00 +
BU021 Amicash V1.0+
BU025 House Hold
Inventory +
BU026 Textengine +
BU031 BBase (Database)+

SETS

SPD001 Beginners 1.5 disks - £5.80
SPD002 Beginners 2.5 disks - £5.80
SPD003 Clip-Art 1.4 disks - £4.60
SPD004 Clip-Art 2.4 disks - £4.60
SPD005 Games 1.5 disks - £5.80
SPD006 Games 2.5 disks - £5.80
SPD007 Clip-Art 3.4 disks - £4.60
SPD008 ED 1 (4 disks - £4.60)
SPD009 ED 2 (4 disks - £4.60)
SPD010 Ed/Sel 1 (4 disks - £4.60)
SPD011 Ed/Sel 2 (4 disks - £4.60)

WE STOCK OVER 2800

DISKS

including Scope, Macro
and Topic.

StarTronics

4 Arnold Drive,
Droghda, Manchester
M35 6RE

VISA

ACCESSORIES

Large Mouse Mats ..£3.50
Squik Mouse£17.50

DISK SPECIAL OFFER

Sony Bulk£5.20
Precision£5.50

+ = Compatible with Plus

Postage & packing 70p

per item for disk

box. Please submit payment

by cheque or postal order

Minimum order of 3 disks

required for credit

card payment

FRED FISH 1 - 680

TBAG 1 - 080

Jewel PD

AMIGA PUBLIC DOMAIN AND SHAREWARE

001 - Wacky and Ill	010 - Rollerpede	019 - Perfect Sound (2 disks)
002 - Label Printers	009 - Air Warrior	020 - Med V3.10
003 - Modern Utility Disk	008 - Wacky Wabbits	021 - Educational (5 disks)
004 - Printer Utility Disk	007 - Interferon	022 - Learn & Play (2 disks)
005 - Master Virus Killer V.99	006 - Tiles	023 - Mars Flight Demo
006 - mCAD v1.8.5	005 - Asteroids	024 - Ann Lemmings Demo
007 - C Language Manual	004 - Girl Actions	(2 disks) (2 Meg)
(4 disks)	003 - Drip	025 - Light Cycle Dual Demo
008 - North V1.3 (2 disks)	002 - Hack	(2 disks)
009 - Sid II	001 - Lem v1.06	026 - Gulf Conflict Demo (2 Meg)
010 - 600 Business Letters	000 - Blizzard	027 - Army Vi Walker
011 - Assassins Megaboot	000 - Golden Reece	028 - All The Movies (1.5 Meg)
Utilities	000 - Coln Drop	029 - All The Movies II
012 - Dope Intro Maker	025 - Megaball	030 - Ghost Writer
013 - Text Plus V3	024 - Operation Lemmings	031 - Amateur Radio
014 - Amiga Fax D.T.P.	023 - Squibb	032 - Tele Communications
015 - Clip Art 1 Caricatures etc	022 - Croak	033 - Cats Sing Kyle
Fish 953 - Power Packer 2.3B	021 - Seven Tiles	034 - Fish 617 - A Day At The Beach
Fish 609 - BBase II	020 - Zeus	(2 disks 3 Meg)
PD Cover - D Copy	019 - Mister & Miss	

FREE PRINTED CATALOGUE
DISKS: 1-9 £1.25 each. 10 or more £1.00 each
Make Cheques payable to J. Lowe

FREE POSTAGE
(Min 3 disks)

19 Hodgkinson Rd
Kirkby-in-Ashfield,
Notts NG17 7DJ
Tel: 0693 754061

MAKE YOUR AMIGA EARN!

Yes, making money with your AMIGA becomes incidental when you know how! Your AMIGA is, if only you knew it, a gold mine. The size and make is irrelevant. Make the initial effort NOW by starting your own HOME BASED BUSINESS.

This may be the most important move you will ever make! REMEMBER: You'll never get rich by digging someone else's "ditch". Anyone in the country, including YOU, can become very rich in a relatively short period of time just by doing a few basic things! It's more rewarding than playing games.

The benefits are many and varied.
Full or part time.
For FREE DETAILS SEND S.A.E. to:

Home Based Business.

AS11, 31 Pilton Place, King and Queen Street,
Walworth, London SE17 1DR.

Anglia PD

(%) = Magazine review score

(P) = Works on A500, A500 Plus and A600

PAGESTREAM OUTLINE FONTS PACK 1 OR 2 (P)

EACH PACK = 5 DISKS £4.95

Each pack contains approx 50 superb new outline fonts for

Registram V2.1 or higher...Fantastical

HOME MANAGEMENT PACK 3 DISKS (P)

£2.97

Calendar, Mortgage, Spreadsheet, Grammar, Mileage, World

Time, Budget, Chequebook, Database, Typing Tutor, Typewriter,

Grocery, List maker, Home Banking.

CLIPART PACKS 1, 2 OR 3 EACH PACK = 5 DISKS £4.95

3 different packs of 5 disks, all full of the very best clipart for

DPrint etc. (P)

FONTS PACK 1 OR 2 EACH PACK = 5 DISKS £4.95

9 different packs of 5 disks, pack 1 contains Publisher fonts,

various fonts, fonts disk 2, Cosmopolitan fonts, large fonts (loads

of great fonts for DPrint etc.) (P)

ANGLIA COLOURFONTS (P) 5 DISKS £4.95

5 disks full of original colour fonts produced here at Anglia

These are 16 colour fonts - not cut and paste! They are produced

in the same way as the chisel font supplied with DPrint and the

Kara range of commercial fonts. They are typed straight in and

work with DPrint and TV Text.

EDUCATION PACK 1 (P) 5 DISKS £4.95

German, Globe, Geotime, Drawmap, Evaluation, Clouds, Formula, Artful,

Gravity Sm, Weather, Wave Maker and more! (This pack is one of our

best sellers and is incredible value for money)

ASTRONOMY PACK (P) 4 DISKS £3.96

This superb pack now includes Star Chart, Amigazur, Total

Concepts, Astronomy, Gravity Well, Grav Sm, Orbit, Planet and

fast facts on the solar system.

PRINTER USER PACK (P) 4 DISKS £3.96

Essential for all printer owners! Includes Label Designer, Label

Printer, Printer Driver Generator, Print Studio, Plus More!

SIMULATIONS PACK (P) 5 DISKS £4.95

All of the best PD simulations in one pack! Metro - Be a city

planner, King Of - You are J.R.R. Tolkien - Nuclear arms race,

Impression Romanum - Grab ancient Mediterranean power,

Seizure - Save the world with your nuclear sub, Truckin' - Run

your own trucking company, DC10 - Learn to fly a DC10 jet, Love of

Conquest - Two players take over the galaxy! Insiders Club -

Superb stock market simulation, Air Warrior - Take your pick from a

label control, Meltasyd V2 (Amiga File Management + PC File

Transfer), Amiga Fax (Desktop Publishing)

DISK EXPERT PACK (P) 5 DISKS £4.95

If you want to learn more about your Amiga, get this pack! - You'll

be a disk expert in no time! Includes Power Packer (Easy file

compactor), Sid (Brilliant CU Replacement Tool), Iconmania

(Change any icon in seconds), Fixdisk, Viruschecker V5.3, D-Copy

(Copies, Repairs, Formats and more), CU Tutorial (All you need to

know) and 909 other utilities!

'C' PROGRAMMERS PACK (P) 6 DISKS £5.94

A complete 'C' language and superb instruction manual provide

all you need to learn the 'C' language. Includes North C (2 disks)

and the C Manual (4 disks)

MED V3.21 MUSIC PACK (P) 4 DISKS £3.96

MED is widely recognised as the best music package, PD or

otherwise! This pack contains V3.21, the latest version complete

with loads of digital samples, a disk full of MED music scores and

some great MED music to load and play! Listen to what your

machine is capable of!

500+ CLASSIC GAMES PACK (P) 5 DISKS £4.95

An incredible collection of superb commercial quality arcade

games! Hours of fun for both kids and adults. Includes: Defender,

Galaxian, Scramble, Missile Command, Pac-Man, B-Pines, Drip,

Space Invaders, Asteroids, Breakout, Tetris + more!

CARD & BOARD GAMES (P) 4 DISKS £3.96

Another outstanding collection! 38 very good "Thinking" Games!

Chess V2, Backgammon, blackbox, Towers, Pipe, Zerg, Maze,

Quelco, Connect4, Dominoes, Draughts, Othello, Go Moku,

Dragon Tiles, Knivke, Cardfield, Mastermind, Wordsearch,

Hangman, Porton and many more.

ADVENTURE PACK (P) 5 DISKS £4.95

7 brilliant adventure games - 4 with graphics, 3 text. Includes:

Calacomb (New!), Lam, A Night At The Top (New!), Huge Adventure,

Tot, A Night (New!), Dragon Cave, Legend Of Lathan (New!).

PUZZLES PACK 3 (P) 3 DISKS £2.97

6 brand new graphical puzzle games, all brilliantly done,

guaranteed to keep you playing! Ashido, Reg Catcher, Rothello,

Quadrin, Hargon, Technoban.

SINGLE DISKS AT ONLY 99p!

BUSINESS

B371 (P) (85%) Amigafax (English Desk Top Publishing)

B372 (P) (85%) Letters

B342 (P) (NEW) Wordpower (Great spell checker with crossword

and anagram solving tool)

UTILITIES

U416 (P) (70%) CU Tutorial (Learn all about it)

U437 (P) (95%) D-Copy V2 (Now an even better disk copier!)

U471 X Copy II (PD version of commercial prog. Save £30!)

U478 (P) Typing Tutor (New! Great features)

U494 (P) (80%) Pascal (Latest full language)

U495 (97%) Viruschecker V6.05 (P) (The latest - for the plus tool)

U496 (P) (95%) Meltasyd V2 (Reads and writes PC disks)

U497 (P) (95%) A500+ Utilities (For the A500+ only!)

U4006 (P) Fancy disk label designer (The best!)

U4007 (P) (93%) Disk Optimiser (Fast disks, DHD, Tool)

U4008 (P) Sid V2 (It's superb! Fully functional)

U4009 (P) Amiga Tutorial (A beginners Manual on disk, superb!)

U4010 (P) (98%) HDClick V2 + File Minder. Superb hard disk

menu maker + Directory utility (NEW!)

U4011 (P) Race Rater. Horse race predictor - Good (NEW!)

U4012 (P) (92%) Megastore Pages V1.3. Produce your own superb

disk magazines (NEW!)

U4013 (P) (85%) Power Logo. Full language (NEW!)

U4014 (P) Lazy. Easy to use Harc, Arc & Zool (NEW!)

U4015 (P) (New!) Power Player (Play any sound module from any

program - some superb modules included!)

U4015 (P) (New!) WBase + Wincontrol (very useful pop up database

and printer control panel)

U4017 (P) (99%) PTrack (Excellent easy to use PC Emulator!)

U4018 (P) (New!) Clipit (100% full of structured clip art for

Registram, Pro Page etc)

GAMES - (1=1MEG)

G5019 (P) A500+ Games (51 Games for the Plus!)

G5022 (P) Chuedo (100% accurate version)

G5025 (P) (NEW!) Monopoly (excellent American version!)

G5027 (P) (91%) Lathan. Superb ultimate type adventure - great

graphics - hordes of monsters (NEW)

G5029 (P) (95%) Defender (Arcade conversion - brilliant)

G5039 (P) (NEW!) Intrepid (Superb - rescue the scientist and

shoot the terrorists)

G6030 (P) (New!) 3Dish-a-matic (High quality graphic puzzle)

G6031 (93%) Crazy Sue (Brilliant commercial quality platform

game!)

G6032 (95%) Quick + Silva (Stunning! - A must have!)

CHILDRENS

C701 (P) Learn + Play (2 disks-super education for 4-10yrs)

C718 (P) Colour Pad (New colouring book for youngsters)

C713 (P) (90%) Peters Quest (Lots of fun platform game)

C719 (P) (87%) Total Concepts (2 Disks) (Astronomy & Dinosaur

Education Pack - Good!)

C720 (P) Colour the alphabet (Great education for early learners 4yrs+)

C724 (P) (95%) Doodly. (Like Hansa Bros and very good - NEW!)

C725 (P) (91%) Mr+Mrs. (Platform adventure for 7yrs+ - it's got

everything!)

Anglia

DESKTOP VIDEO PACK 2 (P) 4 DISKS £3.96

Probably our best pack yet! Provides everything to start you off in

video. 5 Movie for Smooth scrolling titles using any font of any size.

Shows for slideshows with loads of wipes and fades. A-Graph for

business videos. Shadow Maker to add shadows and smooth any

font. Video Librarian. Video Tools. Video Tests. Loads of fonts and

more!

DESKTOP VIDEO PACK 2 INSTRUCTION MANUAL (P) £2.99

A 50 page instruction manual for DTV pack 2. Professionally printed,

readable. Worth a look! Includes a complete guide to the operation of

font and how to use them! Also includes a superb guided

tutorial that takes you through the major programs step by step,

letting you create your own titles as you go! Designed for beginners

and experienced users, this manual will make desktop video easy!

FISH DISKS IN STOCK 350-680 ONLY 99p EACH:

DEJA-VU IN STOCK 1-85 £3.99 EACH!

ANGLIA PUBLIC DOMAIN LIBRARY

(Dept ASH), 115 Ranelagh Road, Felixstowe, Suffolk, IP11 7HU

TELEPHONE 0394 283 494

International orders welcome but please add 30p per disk for post & packing.



Because *Fracscape* doesn't multi-task, I can't grab any of the dialog boxes, however this sample image should give you an idea of its capabilities

continued from page 128

you like the landscape pictures output by *Fracscape*, try getting away from a screen and looking at some real ones, they're much more believable." Nice one.

The program uses DEM files. DEM is short for Digital Elevation Model, and is a file which contains information about the formation of a landscape. The landscapes can be created mathematically, using fractal maths, or they can be constructed from real data about real landscapes.

Once a DEM has been generated or loaded, *Fracscape* can create a colourmap, which is a file that provides colouring for the landscape. Setting things like camera angles then allows the program to render the final image.

The generation of landscapes on screen can take some time – the

"Written as an A level project in three weeks, *Fracscape* is a pretty impressive feat."

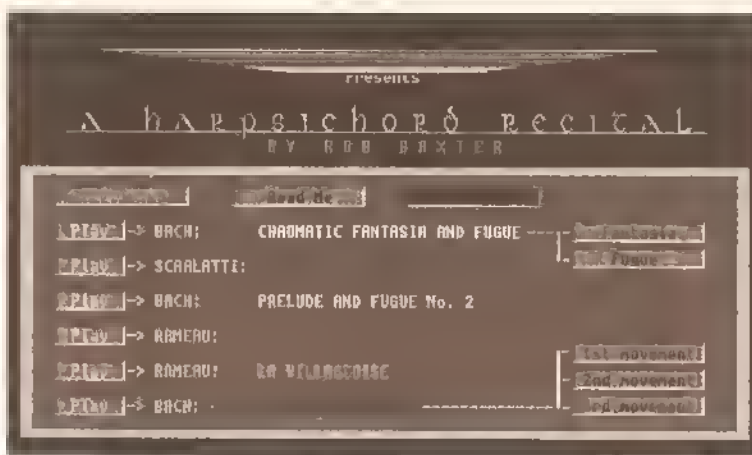
documentation estimates that a 257 by 257 landscape will take about 45 minutes to create. On the other hand, the program has some powerful features built in – such as the ability to keep all the data in RAM, to save time during the processing.

Fracscape has a Vista-style interface – Indeed, Lee thanks Virtual Reality Labs for the Vista series of programs, and suggests that if you like his program, you go out and buy *VistaPro*. It's easy to use, and a fair amount of thought has clearly gone into the user interface.

Dialog boxes are clear and

uncluttered and, except for occasional confusion as to exactly where to click to change a parameter, the program should provide no problems for anyone who's used anything created in AMOS before.

Overall, *Fracscape* is a very impressive piece of work. I have a couple of criticisms, but they're not really aimed at Lee's work – more the AMOS creation environment. The program doesn't multitask – at least, I couldn't return to the Workbench



The *Desktop Harpsichord Recital's* easy menus mean that even the complete Amiga novice can listen to the music

screen after it was running – and I hate the AMOS file selector dialog. However, if you want a fractal landscape generator, I strongly suggest that you get hold of this program.

Lee has sent it to a number of PD libraries, including 17 Bit software and PDSof, so it should be appearing in their catalogues real soon now. And I just hope that Lee continues in this vein – his doc files suggest that he's likely to start work on a 24-bit rendering package when

he's got the time, and judging by his work to date it will be a program well worth seeing.

Program rating.....9/10

DESKTOP HARPSICHORD RECITAL

By Rob Baxter

Available from various PD libraries

You may remember that I reviewed *Classix 1*, a disk of music by Rob Baxter, in the August 1992 edition of *Amiga Shopper*. Well, Rob has dropped me a line to let me know about his latest disk, the *Desktop Harpsichord Recital*. This is the tenth musical disk that Rob has put together (*Classix 1* was in fact the first), and very good it is too.

Unlike Rob's earlier musical efforts, this disk concentrates on one instrument – the harpsichord –

"The disk includes a set of notes on how the music was created."

and he has collected together six pieces written for that instrument. These comprise three by Bach, two by Rameau and one by Scarlatti. Of the Bach pieces, one is in two movements and one – the Italian Concerto – has three.

The harpsichord sound used to play the music is really rather good. It still sounds slightly electronic, but that's almost impossible to avoid. Certainly, given that it's only likely to be played through a monitor or TV speaker anyway, it's totally adequate. Selecting the music is a simple matter of clicking on the required piece – or, if you want a whole recital, clicking on the 'play all' button.

continued on page 133

REVIEWED THIS MONTH

●●● THE BEST ON TEST ●●●

Fracscape	An excellent Vista-style fractal landscape generator. Believe it or not, this one was created as part of an A level project and has now made its way on to the PD scene.
Desktop Harpsichord	Well-written music disk – Ideal for anyone with an interest in high class music on the Amiga.
Mysteries of Runes	Discover the secrets of the ancients – definitely one for the New Age fanatics amongst you...
Frac	Fantasy Role-playing Adventure Creator – If you've got an idea for a game, this could be just what you need to put your ideas into action. Makes life easy for any budding role playing game writers.
Power Text	Impressive word processing power for next to nothing. It's powerful, it's fast and probably 30 or 40 times cheaper than a commercial offering. Packed with features.

AND THE REST...

Mega-Station	The 'complete' CLI work station. A collection of utilities for your machine.
C:commands & fonts	Collection of new and replacement CLI commands.
WBase	Mini database which can be accessed from the Workbench screen.

OLYMPIC DISCS PRESENTS AMIGA Software

99p
Per Disk

- * FREE POST & PACKING
- * SAME DAY SERVICE
- * NO MINIMUM ORDER
- * OVER 1000 DISKS IN STOCK!
- * NEED PRINTED DOCUMENTATION?
- * AVAILABLE ON SELECTED PROGRAMS
- * DETAILS ON CATALOGUE DISK

PACK 1 £9.90

BUSINESS PACK
SUPER DATABASE, SPREADSHEET,
WORD PROCESSOR, BANK A/C
MANAGER, FILE MANAGEMENT &
PC FILE TRANSFER.
RING BINDER & FULLY PRINTED
DOCUMENTATION PROVIDED (5 DISKS)

PACK 2 £9.90

UTILITY PACK
100'S OF TOOLS FROM VIRUS KILLERS
TO DISK COPIERS!
DOCUMENTATION PROVIDED (5 DISKS)

PACK 3 £4.95

SIMULATIONS
AIR WARRIOR, INSIDERS
CLUB, NUKE CONQUEST, DC
10, SEA LANCE, KING OIL,
METRO TRUCKIN' ON,
IMPERIUM ROMANUM,
(5 DISKS)

PACK 4 £4.95

**BEST OF
ERIC SCHWARTZ ON VIDEO**

PACK 5 £4.95

EDUCATION
SPANISH, FRENCH, GERMAN, GLOBE,
GEOTIME, DRAWNAP, CLOUDS,
FORMULA, AIRFOIL, WEATHER, WAVE-
MAKER, WORLD DATA BANK, GRAVITY
SIM AND MORE! (5 DISKS)

PACK 6 £4.95 THE TOP TEN

- 1 VIDEO LAB (UTILITY)
- 2 AMOS DATABASE (UTILITY)
- 3 NCOMMAND (UTILITY)
- 4 X-SWITCH (UTILITY)
- 5 PICTURE HANGMAN (EDUCATION)
- 6 AMOS CA TOOLKIT (UTILITY)
- 7 DIRTY CASH (GAME)
- 8 CU PRINTER DUMP (UTILITY)
- 9 POWERBASE (UTILITY)
- 10 MARVIN THE MARTIAN (GAME)

GAMES 99p EACH

ATOMIC ADAL
ASTEROIDS
BATTLE OF BRITAIN WAR GAME
CLASH OF THE EMPIRES (2 DISKS, 1 MB)
DUNGEON OF MADRO
IRON CLADS - NAPOLEONIC WAR
(2 DISKS, 1 MB)
LIMATATION
PARACHUTE JUMP
PROTECTOR & DOMINION
PORN POOL GUNNER
RAID II
SEA LANCE
SHOOTER
SMOKE OF THE WARLOCK
(3 DISKS, 2 DRIVES, 1 MB)
TOTAL WAR

ALL AS500 PLUS COMPATIBLE

GAMES 99p EACH

BULLTERFISH, DATA, AMIGODOS, CAVE-KUJIKER,
AVANTUR
ASSASSINS VOL 2
SPACE WARRIORS, NAZE, GALAXIES, THING-A-HEAD, MISSILE
COMMAND, BALLY 2
ASSASSINS VOL 3 (3 DISKS, 1 MB)
ASSASSINS VOL 4
CRACKER, JUMPER, TURBO-DUEL, GOMMONO,
REINFORCE, JUMPER
ASSASSINS VOL 5
GO! LEGION, RETALIATION, RATO
ASSASSINS VOL 6
CONVULSION, SCURRY, PACHMAN 87, WELLFLEX, META-
LLANAS
ASSASSINS VOL 7
DESTROYERBASE, CLAUDES RUNNER, NIGHT-
WORKS, JICK
ASSASSINS VOL 8
AIR ACE 2, SABLE PIT, BENTER FORTRESS, 8-1-2
ASSASSINS 9 BLIZZARD, BATTLE-PONG
ASSASSINS VOL 10
ESCAPE, PICK-UP, PIPELINE, SIS
ASSASSINS VOL 11
DAD, CONTEX, TOWERS OF BABEL, TROPIC,
EVEREST
ASSASSINS VOL 12
CAN, LIMATATION, POWER-PODS, 8-1-2
ASSASSINS VOL 13
SUPER-TWINTIS, ASTEROIDS, BLOCK-IT, BAIL,
SCRAMBLE, AMBINATION
ASSASSINS VOL 14
CONIA-CHALLENGE 2, AMIGA COLUMNS
ASSASSINS VOL 15
LETTUCE, MANTRA MOVES, BATTLE-CARS
ASSASSINS VOL 16
WINTERLAND, WILHELM, WESKON, PACHMAN
ASSASSINS VOL 17
DEBERT, TITANIC, PUNCHY F14, BULLFIGHT
ASSASSINS VOL 18
HINTY TA TAPIC, RESISTANCE, SET THEO, INTERFACE
ASSASSINS VOL 19
FRANKIE FREDDY, BLOP-BLOP, GOMMONO, SLIDER, RUP,
FIGHT
ASSASSIN 20
MICRONES, COIN DROP, HOLLYWOOD TRIVIA, MATCH
PATCO

TEL: 051 252 0743

ALL AS500 PLUS COMPATIBLE

PLEASE MAKE CHEQUES & POSTAL ORDERS TO:
OLYMPIC DISCS, DEPT AS, 33 STONEVILLE ROAD, STONEYCROFT,
LIVERPOOL, L13 6QD

CATALOGUE DISK 99p OR FREE WITH ANY PACK

NORTH-EAST AMIGA-USERS

- * Don't send away for it.....WAIT!
- * Visit our showroom first
for.....

- * A500, A600 & 1500 Packs,
- * Books, Software,
- * Upgrades, Spares,
- * Drives, Printers,
- * Accessories
- * Repair Service
- * Advice
- * Demo's
- * Discs

AMIGA



QUALITY OF SERVICE
COMES FIRST AT:

Mon-Sat
9.30 to 5.00
091-510 3300
091-510 3939

Advance Electronics (NE) Ltd
1 Victoria Place, St Marks Road,
Millfield, Sunderland, Tyne & Wear

BULK 3.5" DS/DD DISKS

EX SOFTWARE

25	-
50	16.99
100	29.99
250	70.99
500	139.99
1000	274.99



PREMIUM BULK

25	10.99
50	20.50
100	36.99
250	84.99
500	164.99
1000	317.99

* SPECIAL PURCHASE
OF SOFTWARE HOUSE
SURPLUS STOCK

ALL DISKS ARE
FULLY GUARANTEED
AND ARE COMPLETE
WITH LABELS

3.5" SUPERIOR LOCKABLE DISK BOXES

100 Capacity	4.49
120 Capacity	6.49

3.5" PREMIUM DISKS WITH OUR BOXES

100 Cap. box + 50 3.5" DS/DD	24.49
120 Cap. box + 100 3.5" DS/DD	42.99

3.5" BANK BDX - 80 CAPACITY

A SUPERB PRODUCT WHICH IS BOTH
LOCKABLE AND STACKABLE

ONLY £9.95

WITH 50 PREMIUM DISKS - £29.49



SNAP
COMPUTER

SUPPLIES LTD

HOTLINE

0703

457111

RIBBONS - POST FREE

Full Mark Brand	2 off	4 off
	PRICE EACH	
Citizen 120D/124D Swift 24	2.75	2.55
Citizen Swift 24 Colour (original)	15.00	
Panasonic KXP 1080/1123/1124	3.25	3.05
Star LC10/LC20	2.60	2.40
Star LC10-4 Colour	5.90	5.70
Star LC24-10	2.95	2.75
Star LC24-10 Colour (original)	12.50	
Star LC200	3.00	2.80
Star LC200 Colour (original)	11.50	
Star LC24-200	2.95	2.75
Star LC24-200 Colour (original)	12.50	
Ribbon re-ink	12.95	

ACCESSORIES - POST FREE

Mouse Mat	2.99
Mouse Holder	2.99
2 Piece Universal Printer Stand	6.99
3.5 Disk Clean Kit	2.99
Roll 1000 3.5 Disk Labels	8.99
Printer Cable (1.5 metre)	3.99
Amiga A500 dust cover	3.50
Phillips monitor cover	3.99
Star LC10, Star LC20 covers	
Star LC24-10, Star LC24-200 covers	3.99

All products are subject to availability - All prices include VAT.
Please add £3.50 p+p for disks and boxes. E&OE.



SNAP COMPUTER SUPPLIES LTD Fax: 0703 457222

Unit 16, The Sidings, Hound Rd, Netley Abbey, Southampton SO3 5QA



We'll show you something

Special

Introducing the very first Amiga Format Special Edition: The Complete Software Guide.

More than just a magazine, it's a vital resource for any Amiga owner. Over 1,000 software titles are reviewed and rated by the same team of experts that makes Amiga Format the most authoritative computer magazine you can buy.

Just look at what you get:

- The most comprehensive game listing ever. More than 750 titles reviewed and rated, including the Amiga Format all-time Top 20 games.
- Full coverage of the graphics software scene, plus essential explanations to help you make the right buying decision.
- Business, CDTV, DTP, video, comms, utilities, education and much, much more – literally hundreds of software titles covering every aspect of

computing on the Amiga.

- The all-time Top 50 public domain and shareware titles, including utilities, games, demos and creative packages to help you get the most out of your Amiga.

And it's more than just a software catalogue – it's a buyer's guide too.

Using their skill and judgement, our experts have identified all the top-performing Amiga programs so that you can be absolutely sure of making the right buying decisions.

The Complete Software Guide is an essential purchase for any Amiga owner, so don't miss out on your copy. It's appearing at a newsagent near you soon.



On sale
Now

continued from page 130

The disk is self-booting, so the program runs automatically.

As well as the music itself, Rob has included a well-written set of notes which discuss how the music was created (the harpsichord sounds were created in E-Z FM), and talk about the pieces themselves. It's an interesting read, although it's a shame that you can't read the text and listen to the music at the same time.

The music is well performed, and I can certainly recommend this disk to anyone interested in high-class music on the Amiga.

Value for money.....9/10

THE MYSTERIES OF RUNES

Roberta Smith

DTP disk OS125

The Mysteries of Runes is a slideshow disk containing a sequence of images of Runes, along with an explanation of them. Runes, according to the loading screen, as "the sacred symbols of the Teutonic

"A complete system of philosophy and magic was erected upon the Runes."

races, and in the far past, a complete system of philosophy and magic was erected upon them. This system was handed down from shaman to pupil by word of mouth using the Runes themselves as mnemonics." Hmmmm...

Anyway, the disk runs as a slideshow in overscanned mode, and the illustrations are well drawn. Arioeh, the creator of the disk, has obviously gone to a fair bit of trouble to put together an attractive set of images. The screens are saved as IFF images, so they can be imported into other packages capable of reading the format. The disk is charityware – if you like it, send a donation to your favourite charity.

I'm not quite sure who will use this disk; surely if you follow the ancient ways, you're not likely to have an Amiga sitting on your desk? Or perhaps you are. Anyway, if you fall into this category, the disk can be recommended. If you don't, save your money.

Value for money.....5/10

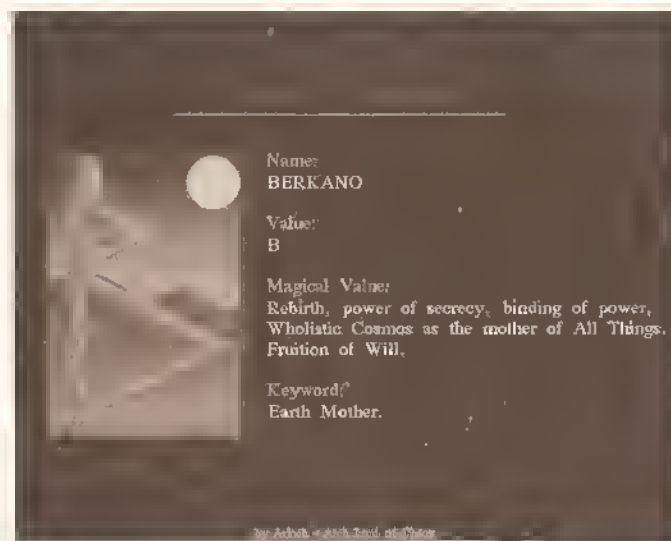
FRAC

Amiganuts disk 1251

It's a while since we've seen anything from Amiganuts, and it's nice to see Ray sending stuff in again. *Frac* stands for Fantasy Role-playing Adventure Creator, and was

started – and there's a hell of a lot of it.

The creation environment is totally text-based – indeed, the cursor was totally disabled when booting from the disk. This means that those only used to the Amiga's Workbench environment may be a



The Mysteries of Runes is a slideshow which will be useful to students of the ancient ways. Or nutters. Or both...

created by Derek Whiteman of Mld Glamorgan in South Wales. Like *Fracscape*, it was created as an A-level project – I wonder if the examiners realise how many of these projects find their way into the Amiga public domain after the exams have been taken!

The program allows a user to create their own adventure game, which can then be saved to disk and distributed. Because it was created for an A-level course, the documentation consists of the project report – which, I must say, goes on for quite some time before it actually gets to the nitty-gritty of how to use the thing.

On the other hand, I guess that anyone who doesn't know the history of computer adventure games may find it interesting. It's certainly fairly well written, so it isn't a pain to read, unlike some program documentation.

You create your adventure using *Frac*'s built-in programming language, Fractol (Fantasy Role-playing Adventure Creator Operating Language). It's quite similar to Basic, but provides a range of new commands specifically for things like text parsing.

To be honest, this is where the documentation becomes something of a pain. You really need to print it all out and read it before you get

little unhappy, although since much of your time will be spent programming the thing, it's not really a problem.

There's no point going in to exactly how *Frac* works here – if you're interested so far, send off for the disk, it's only £2 – but briefly, you set up a map, place objects where you want them to be found and then write the procedures which will be activated when a user uses any specific verb-noun combination. There's support for synonyms of

words, so there's no excuse for users of your adventure to complain that "I have to type 'fast flowing river' every time, when I just want to type 'water'."

"Frac supports the use of graphics and SoundTracker modules, so the games you create needn't be just text-based."

Frac supports the display of graphics and will play SoundTracker modules, so the games that you create don't need to be just text-based, and the author is currently working on a version which will cope with music composed using OctaMED.



Frac enables you to create your own text-based adventures, using a language which is similar to Basic in many ways

This is not a program that you're going to be totally familiar with in an evening.

Creating an adventure will take work – lots of it. But when you've finished, *Frac* allows you to make a stand-alone disk with your creation on it, for distribution. If you fancy having a bash at writing an adventure game, and you're not scared of getting your hands dirty with a little basic Basic programming, *Frac* can be highly recommended.

Value for money.....8/10

**>>>>> READ UP ON ALL THE LATEST DISK MAGS – THIS MONTH LOOK OUT FOR
SCANNER ISSUE 8, AMIGA MAG VOLUME 2 AND TDH 3 >>>>>**

POWER TEXT

Deja Vu Licenseware

Power Text, by Gary Stimson, is a most impressive word processor. It is written in compiled AMOS, and seems to have all the features that most people will want.

Unlike many word processors these days, *Power Text* doesn't provide a WYSIWYG (what you see is what you get) display on the screen. Instead, the text is displayed with no justification, style or whatever. Now,

remember all the commands, it's a good idea to print out the manual and leave it open at the relevant page. You'll soon have no problem with the general ones, though: 'left' left-justifies text, 'lmar n' sets the left margin at column 'n' and so on. The program sends output to the standard PRT: port, so you'll have to have the correct printer driver set up in your Workbench Preferences. You can embed printer control codes in a document, so there are no problems accessing your particular printer's

prompted to turn over your paper and the even-numbered pages are output. This way, your documents are output double-sided, without having to swap each page. And, of course, it means that people using continuous paper can also get double-sided output.

Moving about the document is easy: as well as using the cursor keys, a scroll bar on the right-hand side of the screen displays your current position in the file, and the mouse can be used to move the 'thumbwheel' to a new point. Clicking on a character with the mouse moves the cursor to that character (unlike at least one other PD offering, where clicking with the mouse had no effect on the cursor at all).

There is a built-in spelling checker in the program, as well as a word-count facility. Both work fast, and the spelling checker displays three lines of text whenever a suspect word is discovered – so you can see the context that it's used in. You can, of course, add words to the dictionary, and the program can suggest alternatives to any misspelt word. If you don't want to add a word to the dictionary but you don't want to have the checker stop each time it finds it, select 'Ignore' and it won't be flagged again during the check.

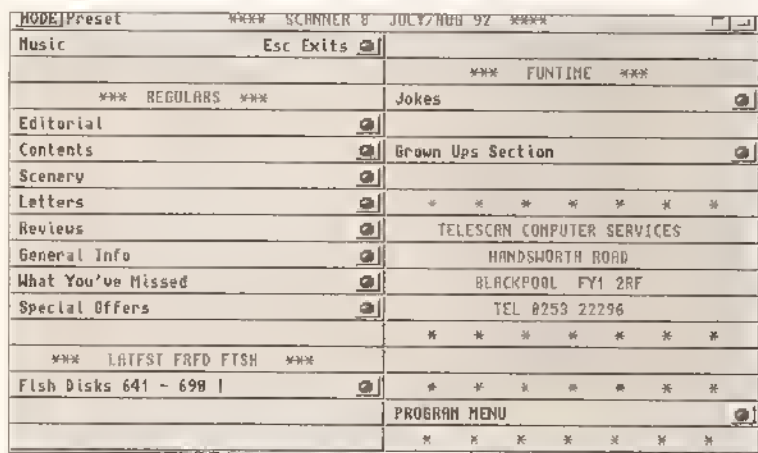
Function keys can have strings assigned to them ('Yours faithfully' and so on), and these can be saved so that they are available the next time you run the program. The Find command works forwards or backwards through the document, and case sensitivity is switchable.

Although the program uses its own format to save documents (denoted by the '.PTXT' suffix added to files), it can save and load ASCII documents. Two versions are supplied: one for 512K machines, which can handle files of up to 500 lines and which doesn't contain the spelling checker, one for machines

with 1Mb or more of RAM, which can handle up to 2,500 line documents. The 500 line restriction in the 512K version could prove a problem for anyone trying to print out the documentation – the manual is 1135 lines long, so you'd have to use some other text viewing utility such as *MuchMore*.

I could go on and on about *Power Text* (I already have!). It really is a remarkably powerful, fast and well thought-out piece of software and, yet again, proves that AMOS is a development system capable of much more than just creating games. If you have a need for a word processor, I strongly suggest that you check out *Power Text* before you spend 30 or 40 times as much on a 'commercial' offering. In future, I'm likely to be using it rather than any other word processor on my machine – its elegance and range of features must be seen to be believed. Get it now!

Program rating.....10/10



Scanner's familiar menuing system means that files are easy to access. As you can see, there's quite a lot on offer this month

different people prefer different methods of working, but the big advantage of non-styled text display is that it tends to be far faster to get around a document, and inserting words doesn't leave you waiting

"Power Text proves that AMOS is a development system capable of creating much more than just games."

while the program calculates what to do with the word wrapping in the rest of the paragraph. In an ideal world, a word processor would display text formatted on-screen, exactly as it will print out – and it would do this with no speed penalty. Sadly, this ain't the real world, and Gary's method is a reasonable compromise.

To format a document – define that paragraphs are justified, words are bold italic and so on – you hit the Escape key and then enter a short word, known as an embedded command. This took me right back to my days of wordprocessing on the BBC Micro, and I was soon at home using the commands. Until you can

special features.

So far, the program appears merely very good. But it's the extras that really make it an outstanding offering. For starters, unlike many other PD, shareware and licenseware word processors, *Power Text* copes with things like headers and footers with ease. It can mail merge with a standard ASCII file. It automatically sizes its screen for PAL or NTSC Amigas. It has an auto-save feature which saves the file you're working on to disk at regular intervals.

One really neat feature is the 'double sided printing' option. When this is selected, odd-numbered pages are printed first, then you are

HAMMING IT UP

No, the box title isn't a reference to 4096-colour Amiga screen modes. We're talking Amateur Radio here. The people at Aardvark PD have a total of 17 Ham radio disks in their collection, and they've sent me half a dozen to review.

Unfortunately, almost of the programs are written in AmigaBASIC, which means that people with A500 Pluses and A600s won't find them of much use – AmigaBASIC wasn't shipped with those machines. Those who have a copy, though, are likely to find something of interest on at least one or two of the disks. For example, there is an RTTY program for anyone with a Kamtronics UTU interface, a program to output Morse at a user-defined rate, a contest logging program and several others on disk H/004. H/011 has a Packet Radio driver for TNCs like the KPC-2, PK8B, PK232 and Kamtronics. If this sounds like the sort of thing that you spend your time wishing you had, drop Aardvark a line at 53 Cumberland Road, Loughborough, Leicestershire LE11 0DE for a full catalogue.

Entering the main program produces the standard menu system used by many disk magazines these days, and reading the menu itself shows that once again, Telescan has packed loads on to the disks. For the first time that I've seen, *Scanner* has a 'grown ups' section. This consists of three pictures and some jokes, and all four are password-protected. Clues to the passwords are hidden elsewhere in doc files on the disk, but it wouldn't take the average 12-year-old too long to find them (about as long as it took me, actually). On the other hand, the pics aren't particularly bad – one is quite funny, actually. It's up to you whether you want your kids to see them. A surprising decision to put this type of stuff on the disk, though.

The Editorial on the disk is written in Norman's inimitable style, and is nicely readable. It's interesting to read Editorials written by people who can write rather more personal stuff than we can in newsstand magazines – and Norman certainly seems to be having a rough

continued on page 136

FREE CATALOGUE

COMPLETE & RETURN THE COUPON BELOW
FOR A FREE 64 PAGE COLOUR AMIGA CATALOGUE

FREE! FROM SILICA



When you buy your new Amiga computer from Silica Systems, we will give you an additional £369.73 worth of software FREE OF CHARGE, including some great entertainment and productivity programs. These free gifts will introduce you to the world of computing and help you to get off to a living start with your new Amiga. Plus, with every Amiga from Silica we will give you 16 nights FREE holiday hotel accommodation for you and your family to enjoy a break at home or abroad.

16 NIGHTS HOLIDAY HOTEL ACCOMMODATION
Every Amiga 500 and 600 from Silica comes supplied with a free 72 page colour brochure with accommodation vouchers. These entitle 2 people to stay up to a total of 16 nights in any of 250 hotels with accommodation FREE. All you have to pay for are your meals (prices are listed in the brochure).

WORTH NEARLY £370!

ARCADE ACTION PACK:

- 10 Superb entertainment titles.
- ASTERIX £24.95
- CHESS PLAYER 2150 £24.95
- DRIVIN' FORCE £24.95
- LIVE AND LET DIE £19.99
- ONSLAUGHT £24.99
- PIPE MANIA £24.99
- RICK DANGEROUS £24.99
- ROCK 'N' ROLL £19.99
- SKWEEK £19.99
- TRIVIAL PURSUIT £19.95

PRODUCTIVITY:
PHOTON PAINT 2.0 £89.95
The recommended paint package
GFA BASIC V3.5 £50.00
A powerful basic interpreter
TOTAL VALUE: £369.73

PERIPHERALS FOR AMIGA COMPUTERS

AMITEK RAM BOARDS

Upgradable RAM board available with 0K, 512k and 1M of RAM. Built-in battery backed clock. Plugs straight into the Amiga A600 trapdoor. No soldering required - 2 year guarantee.

SILIMLINE DISK DRIVE

19mm Super Slimline colour co-ordinated 3 1/2", 1mm, double sided disk drive. Draws power from the Amiga and includes thru-port for connection of additional drives. 1 year replacement guarantee.

CODE	DESCRIPTION	RRP	SILICA PRICE
RAM 9000	AMITEK - 0K Populated - A600	£29.95	£27.95
RAM 9005	AMITEK - 512k Populated - A600	£44.95	£39.95
RAM 9010	AMITEK - 1M Populated - A600	£59.95	£54.95
RAM 9015	AMITEK - 512k Board - A500	£24.99	£22.99
RAM 9020	AMITEK - 1M Board - A500	£39.99	£34.99
RAM 9025	AMITEK - 512k Board - A600	£24.95	£19.95
RAM 9030	AMITEK - 1M Board - A600	£39.95	£24.95

CODE	DESCRIPTION	RRP	SILICA PRICE
DISK 0005	SILIMLINE - 3 1/2" 1mm - Ivory Colour	£79.00	£54.95
DISK 0010	SILIMLINE - 3 1/2" 1mm - Ivory Colour	£69.95	£54.95
DISK 0015	SILIMLINE - 3 1/2" 1mm - Black Colour	£59.95	£54.95

CODE	DESCRIPTION	RRP	SILICA PRICE
PRN 0005	IBM MPS 1270 Ink Jet Printer	£149.00	£129.00
PRN 0010	IBM MPS 1230 P Pin Dot Matrix	£189.99	£129.00

CODE	DESCRIPTION	RRP	SILICA PRICE
MON 0005	GOLDSTAR TV Monitor inc. cable	£199.95	£179.95
MON 0010	IBM 10845 Monitor inc. cable	£299.99	£249.95

CODE	DESCRIPTION	RRP	SILICA PRICE
UPG 1100	1600 Kickstart ROM Swap	£24.95	£19.95

AMIGA 500 STANDALONE



- HARDWARE**
- 512k AMIGA 500 COMPUTER .. £299.99
Inc. 1M 3 1/2" Disk Drive, Mouse Controller, Power Supply, Workbench 1.3 & Manuals
 - 512k RAM EXPANSION TO 1M RAM .. £24.95
 - A520 TV MODULATOR .. FREE
- PLUS! - FREE FROM SILICA**
- PHOTON PAINT V2.0 .. £89.95
 - ARCADE ACTION PACK .. £229.78
 - GFA BASIC .. £50.00

TOTAL PACK VALUE: £664.67
LESS PACK SAVING: £395.67
SILICA PRICE: £269.00

ORIGINAL AMIGA 500
WITH BUILT-IN 16-KEY NUMERIC KEYPAD
£299
INC VAT - Ref: AMIC 0510

AMIGA 600 - NEW LOW PRICE!

£299

INC VAT - (1Mb RAM - No Hard Drive)

NEW! Compact Design

36cm x 24cm x 7cm

78 Key Keyboard

3 1/2" Internal Floppy Drive

1Mb RAM As Standard
10Mb RAM Maximum

Kickstart/Workbench

Latest version: v2.05

Built-in TV Modulator

For connection to a television

IDE Hard Disk Controller

For 2 1/2" Hard Disk Drives, (Upgrade kit to max 120Mb HD also Kickstart upgrade for HD support - available soon)

Hard Disk Model Available

With 20Mb 2 1/2" Hard Disk Drive

Smart Card Slot

Built-in as standard

Trapdoor Slot

For optional plug-in Chip RAM and battery backed clock

2 x Joystick/Mouse Ports

Easy access - located on right side of A600, in front of disk drive

Composite Video Output

Full colour composite video output for connection to most monitors

1 Year On-site Warranty

Silica announce a **NEW LOW PRICE** of £299 for the Amiga 600, a huge saving of £100 off the previous RRP of £399! With its modern compact wedge shape design and the employment of the latest advancements in Amiga technology, it represents the very best investment for home computing. It has all the power of a first class games console with a full range of entertainment software available, as well as being a true home computer, with business and education software and an extensive range of peripherals and accessories.

The Amiga 600 uses state-of-the-art surface mount technology, for maximum reliability and features a 3 1/2" floppy disk drive, mouse, TV modulator and smart card slot all as standard. The innovative smart card slot accepts games, ROM or RAM cards (from 1Mb up to 4Mb) and will take advantage of many future new developments. The very latest version of the operating system, Kickstart/Workbench v2.05 is used in the Amiga 600 and its enhanced chip set facilities include improved graphics resolution, increased genlock support and the facility for up to 2Mb of chip memory. The Amiga 600 is fully compatible with the A870 CD-ROM Drive and Interface which will give it access to a full range of CDTV titles and audio CDs. The Amiga 600 is available from Silica in several configurations (see below) including a specially upgraded 2Mb RAM version.

FREE GIFTS FROM SILICA
SEE PANEL TO LEFT

AMIGA 600 CONFIGURATION OPTIONS

	0Mb Hard Drive	1Mb RAM	2Mb RAM	1Mb RAM	2Mb RAM
NEW! FROM SILICA					
1Mb AMIGA 600 + MOUSE	£299.99	£299.99	£299.99	£299.99	£299.99
1Mb RAM UPGRADE	N/A	N/A	N/A	N/A	N/A
20Mb HARD DISK	N/A	N/A	N/A	N/A	N/A
DELUXE PAINT III	£79.99	£79.99	£79.99	£79.99	£79.99
MYSTERY GAME	VARIABLE	VARIABLE	VARIABLE	VARIABLE	VARIABLE
1 YEAR ON-SITE WARRANTY PLUS! - FREE FROM SILICA					
PHOTON PAINT V2.0	£89.95	£89.95	£89.95	£89.95	£89.95
ARCADE ACTION GAMES PACK	£229.78	£229.78	£229.78	£229.78	£229.78
GFA BASIC INTERPRETER v3.5	£50.00	£50.00	£50.00	£50.00	£50.00
TOTAL PACK VALUE:	£749.71	£809.71	£869.71	£929.71	£989.71
LESS PACK SAVING:	£450.71	£409.71	£469.71	£529.71	£589.71
SILICA PRICE:	£299	£349	£449	£499	£599

CDTV™ COMPUTER SYSTEM SAVE £200!

UPGRADE YOUR AMIGA 500 FOR ONLY £399

We are pleased to announce a very special trade-in offer to Amiga 500 owners who are keen to take advantage of the extra benefits offered by Commodore's multimedia innovation, the CDTV. Amiga owners who return their working Amiga 500 computer (with Kickstart V1.2 or 1.3), mouse, power supply and manual to Silica, can claim a £200 discount off the price of the new Amiga CDTV Computer System. This new system (normal RRP £599) is fully compatible with all Amiga software. In addition, it provides access to a vast range of CDTV titles. CDTV works much like a standard Amiga 500 or 600 but has many additional features including a compact disc drive that can hold up to 550 megabytes of information per disc as well as play audio discs to a very high quality. CDTV comes supplied with the latest infra-red remote control handset, giving you full control of your system from the comfort of your armchair.

	TRADE-IN OFFER
CDTV SYSTEM	£599
AMIGA 500 TRADE IN..	-£200
YOU PAY	£399
	INC VAT - Ref: AMIC 1250



FEATURES INCLUDE:

- Full Compatibility With Existing Amiga Software
- 1Mb Chip RAM
- CDTV Player
- Plays Audio CDs & Video Discs
- Full QWERTY Keyboard
- Built-in Monitor, Serial & Parallel Ports as on the A500
- 800K 3 1/2" Disk Drive
- Mouse Controller
- Infra-Red Remote Control
- Workbench 1.3 & Manuals
- Welcome CD + Caddy

ALL PRICES INCLUDE VAT - DELIVERY IS FREE OF CHARGE IN THE UK MAINLAND

SILICA SYSTEMS OFFER YOU

- FREE OVERNIGHT DELIVERY:** On all hardware orders shipped in the UK mainland.
- TECHNICAL SUPPORT HELPLINE:** Team of technical experts at your service.
- PRICE MATCH:** We normally match competitors on a 'Same product - Same price' basis.
- ESTABLISHED 14 YEARS:** Proven track record in professional computer sales.
- £12 MILLION TURNOVER** (with 60 staff): Solid, reliable and profitable.
- BUSINESS + EDUCATION + GOVERNMENT:** Volume discounts available 081-309 0888.
- SHOWROOMS:** Demonstration and training facilities at our London & Sidcup branches.
- THE FULL STOCK RANGE:** All of your requirements from one supplier.
- FREE CATALOGUES:** Will be mailed to you with offers + software and peripheral details.
- PAYMENT:** Major credit cards, cash, cheque or monthly terms.

Before you decide when to buy your new Amiga computer, we suggest you think very carefully about WHERE you buy it. Consider what it will be like a few months later buying your Amiga, when you may require additional peripherals or software, or help and advice with your new purchase. And, will the company you buy from contact you with details of new products? At Silica Systems, we ensure that you will have nothing to worry about. We have been established for almost 14 years and, with our unrivalled experience and expertise, we can now claim to meet our customers' requirements with an understanding which is second to none. But don't just take our word for it. Complete and return the coupon now for our latest FREE literature and begin to experience the 'Silica Systems Service'.

MAIL ORDER HOTLINE
081-309 1111

SILICA SYSTEMS

MAIL ORDER: Order Lines Open: Mon-Sat 9.00am-6.00pm No Late Night Opening	1-4 The Mews, Hatherley Rd, Sidcup, Kent, DA14 4DX Tel: 081-309 1111 Fax No: 081-308 0608
LONDON SHOP: Opening Hours: Mon-Sat 9.30am-8.00pm No Late Night Opening	52 Tottenham Court Road, London, W1P 0BA Tel: 071-580 4000 Fax No: 071-323 4737
LONDON SHOP: Opening Hours: Mon-Sat 9.30am-8.00pm Late Night: Thursday until 8pm	Sellwidges 11st Floor, Oxford Street, London, W1A 1AB Tel: 071-629 1234 Extension: 2014
SIDCUP SHOP: Opening Hours: Mon-Sat 9.00am-5.30pm Late Night: Friday until 7pm	1-4 The Mews, Hatherley Rd, Sidcup, Kent, DA14 4DX Tel: 081-302 8511 Fax No: 081-309 0317

To: Silica Systems, AMSH-1092-80, 1-4 The Mews, Hatherley Rd, Sidcup, Kent, DA14 4DX

PLEASE SEND A 64 PAGE AMIGA COLOUR CATALOGUE

Mr/Mrs/Ms/Ms: _____ Initials: _____ Surname: _____

Company Name (if applicable): _____

Address: _____

Postcode: _____

Tel (Home): _____ Tel (Work): _____

Which computer(s), if any, do you own? _____

80D

continued from page 136

WBASE

Anglia PD disk U4015

Simon Dick found that he was in need of a small database that he could access from the Workbench screen, but which didn't take up much memory. So he wrote *WBase*.

WBase, when run, appears as a tiny 'window bar' which sits on the desktop. Clicking on it brings it to the foreground; it doesn't expand, but its menu options are activated. From here you can create a new database, add and delete records, sort information and print it out. To create a new database, you must inform the program how many data fields you will be using and enter a maximum possible number of records.

Since most people are likely to use *WBase* as a permanently available address book, this seems to be a real disadvantage. Incredibly popular people like me (not!) never know how many hundreds of friends we are likely to make over the next

few months. Anyway, since there are a maximum of ten (one-line) fields and 150 records in total, I'd better stop meeting new people now.

I'm sure that this program is basically a good idea - I have a similar, but rather better, address book program running on my Mac at work - but it seems to me to be spoiled by pointless restrictions.

WBase's user interface is sparse in the extreme, and my whole confidence in the thing was rather eroded when I read a note in the documentation files which says, rather ominously, "Please don't trust *WBase* with any vital data unless you are sure there aren't any dangerous bugs in it. I am not sure if I have got rid of all the bugs!"

I know that it's impossible to totally debug any program, but why release something and then tell potential users that they would be better off not bothering with it?

Sorry, Simon, but I just can't recommend this one at all.

Program rating.....4/10

WHERE TO GET IT

There are two main ways to get hold of Amiga PD and shareware; from a bulletin board or from a PD library.

The advantage of using a bulletin board is that often the latest software is uploaded as soon as it's available. On the down side, you need a modem to connect, and you'll have to pay phone charges (and sometimes a connection fee to the bulletin board as well).

There are a growing number of bulletin boards with a wide range of Amiga software available for download. Check out O1 for Amiga (071 377 1358) and the Charn Amiga Bulletin Board (081 644 8714). Another good option is joining CIX (the Compulink Information eXchange), which not only has Amiga software but also contains conference and file areas on a wide range of subjects, from politics to scuba diving, biking to Science Fiction. Many of the *Amiga Shopper* writers have accounts on CIX, so you can get first hand advice on your problems, too. For more details, call CIX on 081 390 8446 (voice) or 081 390 1255 (modem).

If you don't want to use a bulletin board, the other way to get PD software is from a PD house. Many advertise in *Amiga Shopper*, and you'll find a comprehensive list of names and addresses at the end of this article. Expect to pay between 99p and about £2.50 per disk - there's often a discount if you buy in bulk, too.

UK PD HOUSES

3 Amigos

16 Marsett Way
Leeds LS14 2DN
☎ 0532 733043

Amiganuts United

169 Dale Valley Road
Hollybrook
Southampton SQ1 6QX

AMDS PD Library (also DeJa Vu)

25 Park Road
Wigan WN6 7AA
☎ 0942 495261

Anglia PDL

115 Ranelagh
Felixtowe
Suffolk IP11 7HU
☎ 0394 283494

Biliterchips

Cliffe House
Primrose Street
Keighley BD21 4NN
☎ 0535 667469

CLS

PO Box 7
Bletchley
Milton Keynes, MK2 3YL
☎ 0908 640763

Crazy Joe's

145 Effingham Street
Rotherham
South Yorks S65 1BL
☎ 0709 829286

Deltrax PD

36 Bodelwyddan Ave
Old Colwyn
Clwyd LL29 9NP
☎ 0492 515981

Digitz

PO Box 144, Mexborough
South Yorks S64 9SL
☎ 0709 571748

EdLib

Scotland Farm, Stockwood Road
Brislington
Bristol BS4 5LJ
☎ 0272 723489

EMPDL

54 Watnall Road
Hucknall
Nottingham NG15 7LE
☎ 0602 630071

Essex Computer Systems

118 Middle Crockerford
Basildon
Essex SS16 4JA
☎ 0268 553963

George Thompson Services

Cucumber Hall Farm,
Cucumber Lane
Essendon
Herts AL9 6JB
☎ 0707 664 654

Goldstar Computers

PO Box 2
Tyldesley
Manchester M29 7BN
☎ 0942 895320

ICPUG

PO BOX 1309
London N3 2UT
☎ 081-346 0050

Kemow Software PD Library

51 Ennors Road
Newquay, Cornwall

NBS

1 Chain Lane, Newport
Isle Of Wight PO30 5QA
☎ 0983 529594

Neural Images

4 Flint Walk, Hartlepool
Cleveland TS26 0TE
☎ 0492 263508

Office Choice (DC-PD)

30 Town St, Kirkintilloch
Glasgow G66 1NL
☎ 0236 737901

PD Soft

1 Bryant Ave, Southend-On-Sea
Essex SS1 2YD
☎ 0702 612259

Pentire PD

10a Hag Hill Lane, Taplow
Maidenhead, Berks SL6 0JH
☎ 0628 666641

Public Dominator

PO BOX 801, Bishop's Stortford
Herts CM23 3TZ
☎ 0279 757692

Riverdene PDL

30a School Road
Tilehurst, Reading
Berkshire RG3 5AN
☎ 0734 452416

Telescan Computer Services

Handsworth Road
Blackpool FY5 1SB
☎ 0253 22296

Sector 16

160 Hollow Way, Cowley, Oxford
☎ 0865 774472

Seventeen Bit Software

PO BOX 97, Wakefield
West Yorks WF1 1XX
☎ 0924 366982

Software Expressions

Hebron House, Sion Road
Bedminster
Bristol BS3 3BD
☎ 0272 637634

Softville

Unit 5, Stratfield Park
Eletra Avenue,
Waterlooville
Hants
PO7 7XN
☎ 0705 266509

Start Computer Systems

20 Holmside
Sunderland
Tyne and Wear SR1 3JE
☎ 091 565 2506

Startronics

4 Arnold Drive, Droylsden
Manchester M35 6RE
☎ 061 370 9115

Unique Computing

114 Salters Road, Gosforth
Newcastle on Tyne, NE3 3UP
☎ 091-284 7976

Vally PD

PO BOX 15, Peterlee
Co Durham SR8 1NZ
☎ 091-587 1195

Wirral PD

PO Box 4, Birkenhead
Merseyside L41 4FW
☎ 051 651 0646



QUALITY AMIGA PERIPHERALS WITH A 2 YEAR WARRANTY

Silica Systems are pleased to present the GVP range of peripherals. GVP are the world's largest third party manufacturer of peripherals for the Amiga range and have a reputation for high specification, quality products. The company was founded only four years ago by a man who knows about the Amiga, Commodore's ex-Vice President of Technology. He, along with a team of Amiga experts including other ex-Commodore staff, understand the add-on requirements of Amiga owners better than anyone. Not only do GVP provide peripherals that Amiga owners want, they also offer peace of mind, with a 2 year warranty on the products they manufacture. So, if you are looking for the very best in peripherals for your Amiga computer, look no further than GVP.

FREE BROCHURE
RETURN THE COUPON FOR YOUR COPY

PC EMULATOR PLUG-IN OPTION FOR HD8+ & A530



- 16MHz 80286 processor
- 287 Maths Co-Processor socket
- 512K of PC RAM plus the use of Amiga RAM
- Supports Hercules, CGA, EGA/VGA (monochrome) and T3100 video modes
- Runs MS-DOS (3.2 and upwards) plus thousands of other PC programs

This powerful 286 emulator module simply plugs into the "mini-slot" of the GVP HD8+ or A530 (without invalidating the warranty). It has full access to the Amiga's resources and allows you to run PC and Amiga programs at the same time, giving you two computers in one.

£199
Ref: EMU 0503

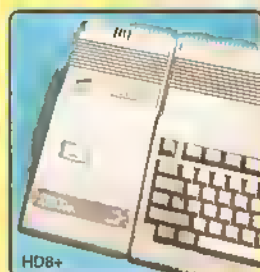
AMIGA PERIPHERALS

GVP's HD8+ hard drive and A530 hard drive with 40MHz accelerator, represent the highest quality Amiga 500 peripherals, at very affordable prices. Each incorporates a fast action hard drive, RAM expansion capability, custom VLSI chip and FastSTROM SCSI driver, for unbeatable performance.

The HD8+ hard drive offers up to 8Mb of standard Internal Fast RAM expansion and the A530 Combo, up to 8Mb of 32-bit wide fast RAM expansion. Both feature a SCSI controller, which supports up to 6 additional devices, and an Autoboot/Gamma cut-off switch. Both are available in 52, 120 and 240Mb hard drive versions.

In addition, the A530 Combo zooms the Amiga forward with an 030 accelerator, running at a blistering 40MHz. This enables your Amiga 500 to run at an incredible 12.1 MIPS, faster than an Amiga 3000! No other product in the world combines all the features found in the A530 Combo! A plug-in PC emulator option, shown below, is available for the HD8+ and A530 Combo.

HARD DRIVE	
32, 120 & 240MB VERSIONS	•
ULTRA FAST 13MB ACCESS	•
10MB/31MB RATE OF 2.5MB/SEC	•
17 OR 31 INCH WIDE SURFACES	•
ACCELERATOR	
40MHz 030286 CPU	•
OPTIONAL 68030 MATHS CO-PROCESSOR	•
RUNS AT 12.1 MIPS (FASTER THAN AN A3000)	•
HARDWARE SUPPORT TO NEAR 3000 ART MODE	•
32-BIT WIDE FAST RAM FOR FAST OPERATION	•
(LINE CACHING THE OPERATING SYSTEM)	•
RAM BOARD	
UP TO 8MB OF 8 OR 16-BIT FAST RAM	•
17 OR 31 INCH WIDE SURFACES	•
32-BIT WIDE FAST RAM	•
(27 OR 31 INCH WIDE SURFACES)	•
OTHER FEATURES	
HDD/ACCELERATOR 'CUT-OFF' SWITCH FOR	•
100% RAM COMPATIBILITY	•
SCSI CONTROLLER FOR UP TO 6	•
ADDITIONAL DEVICES	•
VLSI CUSTOM CHIP	•
FASTSTROM SCSI DRIVER	•
IDENTICAL CONTOUR & STYLING TO THE A500	•
SUN 1-IN-VI ATTENUATION TO PREVENT THE	•
UNIT FROM OVERHEATING	•
DEDICATED POWER SUPPLY	•
'MINI-SLOT' FOR FUTURE EXPANSIONS	•
(E.G. PC EMULATOR)	•
REMOVABLE MEDIA SLOT	•
DIRECT MEMORY ACCESS (DMA) STYLE	•
FOR ULTIMATE PERFORMANCE	•
EASY-TO-USE SOFTWARE	•
2 YEAR WARRANTY	•



WHAT THE PRESS SAY:

'Superb build, excellent aesthetics and blinding speed make this the best A500 hard drive' - AMIGA SHOPPER (HD8+)

'GVP claims this is the fastest hard drive in the world and none of our tests could prove that wrong - Untouchable, THE choice' - AMIGA SHOPPER (HD8+)

'Still the best hard drive' - 92% AMIGA FORMAT 11/91 (HD8+)

'GVP have done it again!' - 94% AMIGA FORMAT 9/92 (A530)

'... the build quality is excellent ... in terms of performance, their gear is the best ... their equipment is worth every penny.' - AMIGA FORMAT 9/92 (A530)

NEW LOW PRICES
ON MOST PRODUCTS
EFFECTIVE 1st SEPT 92

PLUG IN HARD DRIVES & ACCELERATORS

PRICES FROM:

£349

MODEL	52Mb HD	120Mb HD	240Mb HD
HARD DRIVE HD8+	£349	£449	£729
A530 COMBO HARD DRIVE	£699	£799	£1079

FOR ALL AMIGAS

AMIGA 1500 + 2000 + 3000 PRODUCTS



SOUND SAMPLER

- 8-bit stereo sampler
- Plugs into parallel port
- MIDI support for song input
- Extensive editing facilities

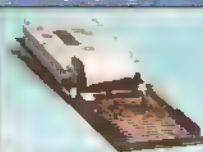
For the professional and audio hobbyist a high quality 8-bit stereo sound sampler that connects into the parallel port on any Amiga 500, 500, 1500, 2000 or 3000 computer. Combined with one of the latest, most powerful and easy-to-use sound and music editing programs available, includes 4-track soundtracker file compatible sequencer.

MUS 2500 **£49.95**

ACCELERATORS

	030 25MHz	030 40MHz	030 50MHz	NEW! 030 60MHz
Processor	680286	680286	680286	680286
Speed MIPS	7.40	12.1	15	30
Speed MHz	25	40	50	60
Math co-processor	680287	680287	680287	680287
Standard 32-bit RAM	16	40	40	40
Maximum 32-bit RAM	16	120	160	160
Extra	SCSI	SCSI	SCSI	SCSI
Code	UPG 011	UPG 040	UPG 050	UPG 060
PRICE	£599	£849	£1109	£1699

All GVP G-Force accelerators can be turned into a hard card by adding a Mount Kit, GVA 4251, £39.95, making it the ULTIMATE Amiga 1500/2000 peripheral. Any 1" SCSI drive can then be mounted on to the accelerator.

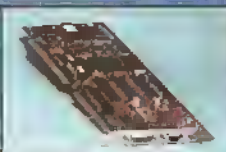


HARD CARDS

- Factory installed Hard Drives
- 0, 52, 120, 240 & 420Mb options
- On-board 2Mb memory sockets
- Add up to 6 SCSI devices
- Easy to install SIMMS

The Impact II HCB hard cards are the equivalent of the HD8+ hard drive, but for the 1500 and 2000 models. Not only are they some of the latest hard drives available, but they also incorporate an unpopulated 8Mb RAM expansion board.

52Mb	Ref: HCB 1252	£299
120Mb	Ref: HCB 1420/1422	£429
240Mb	Ref: HCB 15140	£699
420Mb	Ref: HCB 15142	£1099

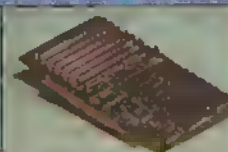


VIDEO ENHANCER

- 16 million colours @ 768 x 560 PAL Res
- Supports comp video, S-VHS & RGB
- Broadcast quality picture
- Now with RGB splitter

Impact Vision 24 is the latest 24-bit Professional Video Adapter. It features 16 million colours on screen at once, built-in lock, flicker filter, frame buffer, frame grabber and digital keyer. Supplied with Caligen V24 3D modelling and rendering software, Scale IV24 video editing software, plus Macro Paint 24-bit palette painter, A1500/2000 requires additional adaptor, GVA 5224, £49.95

IV-24 - VHS SPLITTER	Ref: VSD 5224	£1499
IV-24 - VHS TRANSCODER	Ref: VSD 7151	£1899



RAM BOARDS

- Up to 8Mb of Fast RAM
- Upgrade in 2MB increments
- Supports industry standard RAM chips
- Diagnostic software included
- Fully auto-configuring

The RAM-8 offers an easy way to upgrade your 1500 or 2000 in 2Mb increments up to 8Mb. The RAM-8 is fully auto-configuring and is supplied with peace-of-mind diagnostic software. 6Mb configuration supported for bridgeboard owners

0Mb populated	RAM 2800	£99
2Mb populated	RAM 2802	£149



REMOVABLE MEDIA

- Request 44 or 88Mb removable media
- Available with or without HCB Controller
- 30ms access time
- GVP HCB Controller option extra
- External case available for A500/3000

Each drive comes with a removable cartridge.

External Case	Ref: RMB 3010	£179
44Mb (bare drive)	Ref: RMB 0504	£399
44Mb (HCB)	Ref: RMB 1508	£479
88Mb (bare drive)	Ref: RMB 1510	£499
88Mb (HCB)	Ref: RMB 1512	£579

ALL PRICES INCLUDE VAT - DELIVERY IS FREE OF CHARGE IN THE UK MAINLAND

SILICA SYSTEMS OFFER YOU

- **FREE OVERNIGHT DELIVERY:** On all hardware orders shipped in the UK mainland.
- **TECHNICAL SUPPORT HELPLINE:** Team of technical experts at your service.
- **PRICE MATCH:** We normally match competitors on a 'Same product - Same price' basis.
- **ESTABLISHED 14 YEARS:** Proven track record in professional computer sales.
- **£12 MILLION TURNOVER (with 60 staff):** Solid, reliable and profitable.
- **BUSINESS + EDUCATION + GOVERNMENT:** Volume discounts available 081-309 0888.
- **SHOWROOMS:** Demonstration and training facilities at our London & Sidcup branches.
- **THE FULL STOCK RANGE:** All of your requirements from one supplier.
- **FREE CATALOGUES:** Will be mailed to you with offers + software and peripheral details.
- **PAYMENT:** Major credit cards, cash, cheque or monthly terms.

Before you decide when to buy your new Amiga products, we suggest you think very carefully about WHERE you buy them. Consider what it will be like a few months after you have made your purchase, when you may require additional peripherals and software, or help and advice. And, will the company you buy from contact you with details of new products? At Silica Systems, we ensure that you will have nothing to worry about. We have been established for almost 14 years and, with our unrivalled experience and expertise, we can now claim to meet our customers' requirements with an understanding which is second to none. But don't just take our word for it. Complete and return the coupon now for our latest FREE literature and begin to experience the 'Silica Systems Service'.

MAIL ORDER HOTLINE
081-309 1111

SILICA SYSTEMS

MAIL ORDER:		1-4 The Mews, Hatherley Rd, Sidcup, Kent, DA14 4DX	Tel: 081-309 1111
Order Lines Open: Mon-Sat 9.00am-8.00pm		No Late Night Opening	Fax No: 081-308 0808
LONDON SHOP:		52 Tottenham Court Road, London, W1P 0BA	Tel: 071-580 4000
Opening Hours: Mon-Sat 9.30am-6.00pm		No Late Night Opening	Fax No: 071-323 4737
LONDON SHOP:		Selldridge (1st Floor), Oxford Street, London, W1A 1AB	Tel: 071-629 1234
Opening Hours: Mon-Sat 9.30am-6.00pm		Late Night: Thursday until 8pm	Extension: 5914
SIDCUP SHOP:		1-4 The Mews, Hatherley Rd, Sidcup, Kent, DA14 4DX	Tel: 081-302 8811
Opening Hours: Mon-Sat 9.00am-5.30pm		Late Night: Friday until 7pm	Fax No: 081-309 0017

To: Silica Systems, AMSP 1092 68, 1-4 The Mews, Hatherley Rd, Sidcup, Kent, DA14 4DX

PLEASE SEND A BROCHURE ON THE GVP RANGE

Mr/Ms/Miss/Ms: Initials: Surname:

Company Name (if applicable):

Address:

Postcode:

Tel (Home): Tel (Work):

Which computer(s), if any, do you own?

Find your local group

1520 Plotter Group (ICPUG) = John Bentley 06286 65932

16-32 Micro Programming AMOS, bi-monthly fanzine, PD, (Fish->590) Membership 100FF/ £10 Contact F Moreau, 132 rue Jean Follain, 50000 Saint-Lo, France = 31 52 20 02

Amiga Addicts Newsletter and open nights For info SAE to A Minnock, Clonkelly, Binn, Co Offaly, Ireland.

Amiga Artists Club 34 Roundhay Mount, Leeds LS8 4DW. For Amiga artists, musicians and coders. Pirates not welcome. Free. = KAM on 0532 493942, 5-8pm

Amiga Beginners' Club 110 Whitehill Park, Limavady, Co. Londonderry BT49 0QG. Club to help newcomers. Bi-monthly club disk, and a small PD library. Membership £2 for a single disk, or £20 for every issue

Amiga Computer Club PD Library, graphics, video, DTP, monthly mag SAE for details to R McDonald, 3 Islay Court, Irvine KA11 4JQ

Amiga help club Contact John Kewley, Derlwyn, New St, Bethel, Nr C'von, Gwynedd, LL57 1YW. Meetings Mondays 7 - 10pm. Graphics, sound, Workbench, programming, help on any topic. Beginners welcome. Free membership

If your group isn't mentioned, fill in the form at the bottom of the page to let us know about you

Amiga Helpline Contact Gordon Keenan, 21 Skirsa Place, Glasgow G23 5EE. Software/hardware help service, free PD, DTP problems sorted, plus general Amiga chit-chat. Send a stamp for full details. Membership £15/year

Amiga Musicians' Club Membership gets you a disk with 50 IFF samples a month for 12 months. Also sample service. Membership £30. Contact Gavin Wylie, Guthrie Street, Camoustie, Angus

Amiga Navigation Contact Dave Thomas 4a, Allister St, Neath, W Glamorgan. PD, advice, even small repairs and social evenings. Weds 7 - 9pm. Membership £10/year

Amiga Network International 2 monthly club disk, reviews, advice. For info contact Phil or Steve: 434 Denby Dale Rd East, Wakefield, W Yorks WF4 3AE

Amiga PD Oliver MacDonald at Tunley, Albaston, Gunnislake, Cornwall, PL18 9EL. Small but friendly PD Library, 99p a disk. Distribute your own written PD. Send £1.50 for catalogue disk

Amiga PD Exchange at 27 Spa Rd, Preston, Lancashire, PR1 8SL. Chance to exchange PD, shareware, Fish and Tbag disks. £1 for disk and membership

Amiga Users' Klub, Windsor House, 19 Castle St, Bodmin, Cornwall PL31 2DX. Meets every Friday from 6.30-9pm, to expand members' knowledge of Amiga and to help solve people's problems. Contact Jack Talling

Amiga User Group - FYLOE Contact Andy Wilkinson = 0253 724607 25 Glen Eldon Rd, Lytham St Annes, Lancashire FY8 2AX. Meetings twice a month, newdisk, tuition, technical support, Amiga advice Membership £15/year

Amiga Users club Contact Edward Metcalfe = 021 7441430 49 Burnan Rd, Shirley, Solihull, W Midlands B90 2BG PD swapping, games swapping (not copying), competitions, free membership

Amiga Video Producers' Group Meets quarterly in Swindon. For info SAE to J Strutton, 8 Rochford Cl, Grange Park, Swindon, Wilts SN5 6AB = 0793 870667

Amiga Witham Users' Group 85 Highfields Rd, Witham, Essex CM8 1LW. Tips and Basic programs. K Anderson = 0376 518271

Amigaholics Club Free membership. Own disk magazine. For further information contact Kevin Bryan = 071-580 2000 Ext 240 or write to 29 Wolfe Cres, Charlton, London SE7 8TS

Amigamanla Bi-monthly newsletter (tips, advice etc), quality PD, discount hardware, software and accessories, free advice. Discount card for High St shops. Annual membership fee £10. Contact S Green, 9 St Lukes Walk, Hawkinge, Kent CT18 7EF

Amos Programmer Club Free membership, swap AMOS programs and PD, disk magazine and help for new users. Contact Gareth Downes-Powell, 6 Brassey Avenue, Broadstairs, Kent CT10 2DS

AMOS Programmers' Exchange Free membership. Swapping software and ideas. Help available. J Lanng, 7

Majestic Rd, Hatch Warren, Basingstoke, Hants RG22 4XD

Amos Programmers Group John Mullen at 62 Lonsdale St, Workington, Cumbria CA14 2YD. Programming hints, tips, tutorials plus several others. SAE for info. £10 membership for bi-monthly disk mag

Avon Micro Computer Club Graphics and animation, business and the chance to speak to professional users. £3 per annum. Contact Roger: 95 Downend Rd, Horfield, Bristol = 0272 513224

Basic Programmers' Group 68 Queen Elizabeth Dr, Normanton, West Yorks WF6 1JF. Encourages the use of Basic, exchanges ideas and assists beginners to the language. Free newsletter Mark Blackall = 0924 892106

Beaconsfield and district CC Contact Philip Lishman = 0494 782298 27 Russell Court, Chesham, Bucks. WF6 1JF. Encourages the use of Basic, exchanges ideas and assists beginners to the language. Free newsletter Mark Blackall = 0924 892106

Bloomfield video and computing Contact Mrs Beryl Hughes = 0267 2357522 Nashville, 50 Glynderi, Carmarthen, Dyfed SA31 2EX. Meetings at the Bloomfield Community Centre, 7.30pm alternate Tuesdays. Amiga for beginners, video techniques etc. Membership £5

BR & CJ Computer Club B Robinson at 23 Fairway Rd, Shephed, Loughborough, Leicestershire, LE12 9DS = 0392 72889 or 03922 841296. Regular disk mag packed with tips, reviews of games and serious software, game cheats database, demos and utils, very large PD library. Membership fee £1.25

Camberley User Group Lectures, competitions, advice, meetings, free membership. For more info contact F Wellbelove = 0252 871 545

Champion PD Club PD at 30p, newsletters, advice, help and more. Membership £10. Contact Steve Pickett, 31 Somerset Close, Catterick, N Yorkshire, DL9 3HE

Chester-le-Street 16-Bit Computer Club Ground floor function suite, The Civic Centre, Newcastle Rd, Chester-le-Street. Club meets Mondays from 7.30-9.30pm. Exchange advice and swap tips. Contact Peter Mears = 091.385 2939

GET YOURSELF LISTED

If you run a user group which isn't listed on this page, fill in the form below for your free entry. Send it to **Amiga Shopper User Groups List**, 30 Monmouth Street, Bath BA1 2BW. We reserve the right to refuse entries.

AS18

Group name.....

Contact name.....

Contact telephone number.....

Contact address

.....

Place of meetings.....

Time of meetings.....

Type of activities

.....

Membership fee

CDTV Users Club Swap views on software and hardware. Contact Julian Lavanini, 113 Fouracres Rd, Newall Green, Manchester M23 8ES

Chic Computer Club Full details with an SAE to STAMP, Chic Computer Club, PO Box 121, Gerrards Cross, Bucks. Contact Steve Winter ☎ 0753 884473

Club Amiga £10 a year for PD and a 24-hr helpline service (091-385 2627). For more info send SAE to Chris Longley, 5 Bowes Lea, Shiny Row, Houghton Le Spring, Tyne and Wear

Club Futura Advice to programmers and beginners. Send SAE for info to G Holland, 16 Hermiston, Monkseaton, Whitley Bay, Tyne & Wear NE25 9AN

Comp-U-Pal Australian group for users in the outback. Newsletter, helpline, PD library. Membership A\$24. Comp-U-Pal, c/o MDA, PO Box 29, Knoxfield 3180, Victoria, Australia

Compuqueue Steve Lalley at Inskip Meeting Hall, Ashurst, Skelmersdale, Lancs on 0695 31378 7.45pm - 10.30 pm every Tuesday. From beginner to advanced user. Half year membership £2.50 children, £3 adults

Computer Club 16 Laton Rd, Hastings, East Sussex ☎ 0424 421480. A 16-bit club dedicated to being computer enthusiasts. Membership costs £15 per year

Deluxe Cheats Disk User Group Steven Frew at 96 Campden Green, Solihull, West Midlands, B92 8HG. Software advice. Updates every 2 months! £4 for disk £2 for updates

Edinburgh Amiga Group Membership £5, includes free advice and PD. Contact Neil McRea, 37 Kingsknowe Road North, Edinburgh EH14 2DE with SAE

Enfield Amiga club Contact Sean Clifton ☎ 081 8042867 32a Hoe Lane, Enfield, Middx Meet, swap, competitions, helping new users with problems

Exeter 16 Bit User Group Andrew Deeley or Phil Treby at 25A Gloucestershire Rd, Exwick, Exeter, EX4 2EF. Meeting every Wednesday 7pm. Programming £6 per annum

GFA Basic Forum Contact J Findlay ☎ 0788 891197 or send SAE to 52 Church Rd, Braunston, Nr Daventry Northants NN11 7HQ. Beginners and advanced users welcome. Tutorial disk available at £15. Membership free

Guru Masters PD, demos etc, contact the Sheriff, 111 Sherbourne

Rd, Banbury, Wolverhampton, WV10 9EU ☎ 0902 782277

Hampshire PD Club Mike Gallienne at 79, Carless Cl, Rownes, Gosport, Hants, PO13 9PW on 0705 585323. Public Domain Disks at 35p. Competitions once a month. Send an SAE for more info to the above address. £10 a year

Hereford Amiga Group Membership free, help, exchange of PD and shareware. Lotus Turbo 2 Quad Player Championship. Contact John Macdonald, Alma Cottage, Allensmore, Hereford HR2 9AT ☎ 0981 21414

In Touch Amiga Penpals, contacts, PD, swaps £2.50/year. For more information contact P Allen, 0342 835530, PO Box 21, Lingfield, Surrey RH7 6YJ

Independent Commodore Products Users' Group Biggin Hill Library, Church Rd, Biggin Hill, Kent. Meets most Thursdays from 7.45-9.45pm. Lectures and open nights. ☎ John Bickerstaff after 8.30pm 081-651 5436. Also national network of user groups. Contact individual groups for details on activities, cost, meetings etc:

Andover ☎ R Geere 0264 790003
Anglesey ☎ N Massey 0407 765221
Coventry ☎ W Light 0203 413511
Dublin ☎ G Reeves 010 353 12 883863

Leeds ☎ R Eyre 0532 487691
Macclesfield ☎ P Richardson 0298 23644

Merseyside ☎ G Titherington 051 521 2553

Mid Thames ☎ M Hatt 0753 645728
S Wales ICPUG ☎ I Kelly 0222 513815

Solent ☎ A Dimmer 0705 254969
SouthWest ☎ P Miles 0297 60339

Stevenage ☎ B Grahnger 0438 727925
Watford ☎ M Pryor 0442 864 234

W Riding ☎ K Morton 0532 537318
Wigan ☎ B Caswell 0942 213402

Kent Youth Computer Group Contact Jim Fanning ☎ 0233 629804 North Youth Centre, Essella Rd, Ashford, Kent. Meetings at the North Youth Centre, Thursdays 7 - 10pm computer fair visits, video and DTP work, monthly newsletter. Membership 40p/month

Lothian Amiga Users Group Contact Andrew Mackle ☎ 0506 630509 52 Birniehill Ave, Bathgate, W Lothian EH48 2RR Advice and help in buying hardware, software etc, group buying, dealers' circulars welcome. Membership free

Maritime Amiga Club Maritime computing, interact with seafarers ashore on Amigas. Contact CDR K Osei, GN Ships Refit Office, 51 Rue de la Bretonniere, 50105 Cherbourg, France. ☎ 33 33225447

Marksman (Trojan Phazer user group) Contact David Green, 67 Thicket Drive, Maltby, Rotherham, S Yorkshire S66 7LB Promotes use of the Trojan Phazer, swaps PD and own programs, aims to set up a disk magazine

N Ireland Amiga User Contact Stephen Hamer, 98 Crebilly Rd, Ballymena, Co Antrim BT42 4DS. Disk based mag £2.50/issue. Free PD, SAE for further info

Norwich Masked Heros SAE for Info. Free membership. Contact Zorro, 278 Aylsham Rd, Norwich, Norfolk NR32RG ☎ 0603 409899

Pennine Amiga Club 26 Spencer Street, Kelghley, West Yorkshire BD21 2BU. Free membership, free advice and a newsletter. Contact Neville Armstrong for more info ☎ 0535 609263

Perth and district amateur computer society Contact Alastair MacPherson 137 Glasgow Rd, Perth. Meetings third Tuesday in every month, 8pm. General advice, talks, Amiga PD. Membership £6 or free for under 16s

Public Domain Exchange Demos, music, utilities, animation. Annual fee £8 Contact D McLeish, 26 Taunton Ave, Leigh, Lancs WN7 5PT

Public Domain User Group Swaps PD, provides advice. SAE to 12 Oxford Rd, Guildford, Surrey

PUG Contact S Jackson ☎ 0446 772331 Whitebeam Cottage, Trethynnyll, Cowbridge, S Glamorgan Cheap PD library, swap hints, reviews, articles etc. SAE for more details

Redburn Computer User Group Contact Paul Armstrong ☎ 0294 56003, 12 Highfield St, Kilwinning, Ayrshire KA13 7BN. Meetings at the Redburn Community Centre, Dickson Drive, Irvine. Meeting every second Wednesday from 5 Aug 92, 6.45 - 9.30pm. Help, ideas, PD and shareware, graphics and business. Membership 75p per meeting; £7/year

Rye Computer Club Swap/meet at the Rye Community Centre. For info contact Oliver Campion, 71 The Mint, Rye, E Sussex TN31 7DP ☎ 0797 222876

Serious Amiga Users Membership £5, £1 admission. Contact J Kucak for more: ☎ 0706 290387. Fortnightly meetings 7.30-11 at the High Crompton Conservative Club

Sheldisoft PD at Wilmar Lodge, 13 Churton Rd, Rhyl, CLwyd LL18 3NB. Write for more info. Basic programming help. CLI: Amos help. Disks from 50p to 80p. Membership free

Sherlock PD Quarterly disk mag, help and advice for beginners. 50p/disk. A Doyle, 44 Milton Street, Warrenpoint, Co Down, N Ireland

Shropshire Amiga Link Advice, monthly disk mag, PD £15/year fee. Contact N Cockayne, 2 Dodmoor Grange, Randlay, Telford, Shropshire TF3 2AW ☎ 0952 591376

Slim Agnus 115 Brocks Drive, North Cheam, Sutton, Surrey SM3 9UW. Meet last Thursday of month. PD library, BBS, advice from Amiga experts. Contact Philip Worrel.

Software Exchange Service 13 Boumville Lane, Stirchley, Birmingham, West Midlands B30 2JY. For more info ☎ Michael Pun 021-459 7576

South 16 Bimonthly mag and disk, also PD library. SAE for more info. £10/year. Contact Bruce, PO Box 16, Southampton SO9 7AU

South Wales Club Newsletter, PD library, free newsletter, programs, help and advice. For more info contact D Allen 53 West Avenue, Trecenydd, Caerphilly, CF8 2SF

Unique Styles Derek at 15 Montgomery Rd, Highbrooks, Tunbridge Wells, Kent on 0892 518319. By post only. For Amiga artists, programmers/musicians. Free membership

Wardray Hern Consortium User group of user groups for Amiga and possibly others. Membership fees to be discussed and incurred. PD library to be set up. Also Hern connection - worldwide contacts wanted. SAE and disk to WardCon info, (AS) Warren Hardy, 21 Stockfield Ave, Fenham, Newcastle upon Tyne NE5 2DX

Warpdrive (friends of Amiga) Amiga helpline, PD library, bi-monthly disk mag, free drinks, competitions and infosheet. £15 a year. Contact B Scales 110 Burton Ave, Balby, Doncaster DN4 8BB ☎ 0302 859715

WCSPSAI Help available. PD disk of your choice and newsletter every month. PD at £1. Membership fee £25. For more information contact A Jamieson ☎ 0749 677609

Wrexham District Computer Club PD, library, equipment loan. 10p to join, 50p to get in. Memorial Hall, Wrexham every Thursday, 7-10pm. Contact Paul Evans, 3 Ffordd Elfed, Rhosnesi, Wrexham, Clwyd LL12 7LU

Your Amiga Club Helplines, PD, social evenings, classes, club mag. Fee: £12, family £15. Contact P Higgins ☎ 0424 892269. The Old Chapel, Church Rd, Catsfield Battle, Sussex TN33 9DP

PRODUCT LOCATOR

PUBLIC DOMAIN • PUBLIC DOMAIN • PUBLIC DOMAIN • PUBLIC DOMAIN • PUBLIC DOMAIN • PUBLIC DOMAIN

Welcome to the *Amiga Shopper* Buyer's Guide, your regular guide to what's hot and what's not in the Amiga market place. It's designed as a simple-to-use yet comprehensive guide which will help you to make the right buying decisions. The Buyer's Guide will run each and every month and as new products are released and others discontinued, we'll be updating it

accordingly. This month we bring you what is possibly the most comprehensive guide to software for the Amiga owner which is all available in the public domain. It may not include each and every PD product ever produced for the Amiga (that would take up virtually the whole of *Amiga Shopper!*), but rest assured that all the major titles are here.

BUSINESS SOFTWARE

Program	Library	Disk	Type	Issue	Rating
TextPlus 3.0	PDSoft	V261	Word processor	1	****
TextEngine 3.0	Digitz	277	Word processor	13	***
WordWright	PDSoft	V28	Word processor	13	****
AZSpell	Digitz	Uti277	Spell checker	13	****
PowerSnap	Fred Fish	542	Grab screen text as ASCII file	8	****
UEdit	AmigaNuts	1162	Text editor	8	****
AmigaFox	Office Choice	U173	Combine text with graphics	8	**
AmiBase Pro 3	AmigaNuts	-	Powerful database	9	****
Liner	Fred Fish	285	Ideas processor like Flow	10	****
NewPRT	Digitz	149	Printer drivers for PageStream	10	****
PageStreamFonts	Digitz	149	Fonts for PageStream	10	****
EasyBanker	GTS	Home2	Home finance program	10	****
HomeHelp	GTS	Home1	Computerised grocery lists	10	****
I-Man	GTS	Home2	Inventory list management	10	***
MultiPlot	Fred Fish	467	Data graphing program	7	****
Power Planner	Deja Vu	Licenseware	Diary/telephone book	15	***
Power Base	Deja Vu	Licenseware	Database	15	****
CruiseWord	PD Majik	-	Word processor	16	**
AmiCash	PS Soft	V630	Home accounts	16	***
Home Manager	PD Soft	V660	Personal organiser	16	****
Word Power	Deja Vu	Licenseware	Spell checker	17	****

MUSIC UTILITIES

MED 3.11	AmigaNuts	973	Sound Tracker	1	****
Module Processor	AmigaNuts	864	Convert modules to executable	1	***
Rippers Disk	17Bit	1055	Rip modules from memory	5	****
Sound Ed	Fred Fish	486	Sample editor	5	****
Module Master	TBAG	58	Play modules in various formats	9	****
K1 Editor	Fred Fish	332	Patch editor for Kawaii K1	10	****
CZED	Fred Fish	223	Patch editor for Casio synths	10	****
IBEM	VirusFree	1485	PC compatibles	3	****

EMULATORS

Program	Library	Disk	Machine	Issue	Rating
A64	AmigaNuts	1030	Commodore 64	3	****
ST Emulator	Digitz	Uti149	Atari ST	15	***
QL Emulator	AmigaNuts	1030	Sinclair QL	3	***
ZX Emulator	AmigaNuts	1030	ZX Spectrum	3	****

VARIOUS UTILITIES

Program	Library	Disk	Type	Issue	Rating
A-Gene	AmigaNuts	933	Genealogy program	1	****
Command.CDM	17Bit	866	CLI commands in RAM	2	***
MessySID 2	PDSoft	V490	Access PC disks with ease	13	****
Elements	Fred Fish	593	Periodic table of elements	13	****
Cass 1.1	Fred Fish	579	Make your own cassette covers	13	***
Badger	Fred Fish	543	Event scheduler	13	***
School TimeTable	AmigaNuts	1100	Generate school timetables	5	***
Arq	CIX Download	-	Improved system requesters	8	****
LC24-200 Fonts	NBS	L503	Fonts for Star printers	8	****
Menn Rnnner	AmigaNuts	1024	Run programs from menu	8	***
ButExchange	Fred Fish	494	Reverse mouse buttons	9	****
DeafLab	Fred Fish	494	Sign language utility	9	***
PWKeys	Fred Fish	494	Manipulate windows with hotkeys	9	***
InputLock	Fred Fish	494	Turn off mouse and keyboard	9	****
RunMe	AmigaNuts	1186	Run programs from menu	9	****
Hard Drive Special	GTS	-	Collection of hard drive utils	9	****
ScreenMOD	TBAG	58	Modify screens and windows	9	***
Words 3	AmigaNuts	-	Solve anagrams	9	***
ClockTick	TBAG	58	2.0-like clock mouse pointer	9	****
FileSearch	Fred Fish	531	Find files on a hard disk	11	***
Format 1.1	Fred Fish	535	Replacement disk formatter	11	****
PowerPacker Utils	Fred Fish	542	Utilities for PowerPacker	11	***
LabelMaker	Fred Fish	548	Create disk labels	11	***
ToolsDaemon	Fred Fish	561	Run programs for 2.0 Tools menu	11	****
Flir	Fred Fish	562	SiD clone for Workbench 2.0	11	****
AWP	Fred Fish	554	Animate WB2.0 clock pointer	11	****
RMBShift	Fred Fish	547	Select multiple icons	11	****
Smart Icon	Fred Fish	316	Iconifies windows	10	***
Flash Disk	GTS	Utils2	Disk optimizer	10	****
Snap 1.4	Fred Fish	326	Grab screen text into clipboard	10	****
SysInfo	Fred Fish	571	System Information program	11	****

PRODUCT LOCATOR

MKS Lens	Fred Fish	574	Magnify area of screen	11	***
Font Manager	Digitz	149	Manage your bitmap fonts	10	****
Recover	Digitz	149	Rescue files from corrupt disks	10	***
Track Display	GTS	Utils1	Shows position of drive heads	10	***
FastDiskII	GTS	Utils1	Disk optimizer	10	***
FileMaster	GTS	Utils1	Binary file editor	10	****
DiskSpeed	GTS	Utils1	Disk drive benchmark program	10	****
Formatter	GTS	Utils1	Replacement disk formatter	10	***
SetNoClick	GTS	Utils1	Turn off annoying drive click	10	***
DevRen	GTS	Utils1	Rename devices including DFO	10	****
LockDevice	GTS	Utils1	Better AmigaDOS 'Lock' command	10	****
Label Print	Fred Fish	227	Disk label printer	10	***
Banner	T8AG	52	Print huge banners	10	****
Avall Mem	Fred Fish	285	Graphical memory monitor	10	***
DCopy	AmigaNuts	700	Disk copier	10	****
MessyDOS	NBS	U619	Read and write PC disks	6	****
Master Virus Killer	AmigaNuts	971	Virus killer	1	****
Imploder	Fred Fish	422	File compressor	7	***
ARTM	17Bit	1274	System monitor	7	****
File and HD management	PD Soft	V573	Hard drive utilities	15	****
Sld 2	17Bit	-	Directory utility	16	****
File and HD management 2	PD Soft	V575	More hard drive utilities	16	***
Outline fonts	George Thompson	-	For ProPage and PageStream	16	****
Electronic baby book	PD Soft	V658	Record your baby's details	16	****
Astro 22	PD Soft	V685	Astrology program	17	****
Touch typing tutor	NBS	CLU03	Teach yourself touch typing	17	****
Magnetic Pages	PD Soft	V688	Create your own disk magazine	17	****
COMMS UTILITIES					
LHA 1.11	Fred Fish	593	Archiving utility	13	****
Phone Line Watcher	T8AG	58	Keep track of phone bill	9	****
Term 1.8A	Fred Fish	534	Terminal Program for WB2.0	11	****
NComm	17Bit	1275	Terminal Program	7	****
PROGRAMMING UTILITIES					
DICE	Fred Fish	443	C Compiler	3	****
Copper Master	AmigaNuts	1083	Generate Copper Lists	5	***
BRef	Fred Fish	494	BASIC cross referencing utility	9	****
Power Logo	EdLib	24	Enhanced Logo Interpreter	9	***
MIDI Library	Fred Fish	227	Program MIDI applications	9	****
PCQ Pascal	AmigaNuts	1113	Pascal compiler	6	****
NorthC	AmigaNuts	1112	C Compiler	6	****
Acc Assembler	AmigaNuts	-	Fast Assembler	6	****
Remm and Rams	Deja Vu	Licenseware	Map editor and scroller utilities	17	***
GRAPHICS UTILITIES					
SpectraPaint	Slipped Disk	19	Paint package	3	****
Deluxe Draw	Slipped Disk	18	Paint package	3	**
AMDS Paint	Deja Vu	83	Paint package	3	***
HAMLab	AmigaNuts	1149	Image processing	3	**
3DFont	17Bit	1007	Text to Sculpt Object	3	***
SkyPaint	T8AG	37	Text-based graphics	3	***
SlideShow Kit	VirusFree	1485	Create your own slideshows	3	****
Mandel Mountains	Softville	751	Creates 3D Mandelbrot	5	****
3D Objects Disk 1	AmigaNuts	-	Collection of Sculpt Objects	8	****
PictSaver	Fred Fish	543	Grab screens in IFF Format	9	****
LendBuild	AmigaNuts	1190	Fractal landscape generator	9	**
Video Text Displayer	AmigaNuts	1199	Basic text scroller	9	***
Converters	17Bit	1221	Image conversion tools	9	***
Vector Designer	AmigaNuts	-	Vector graphics designer	9	**
Plasma	Fred Fish	573	Fast fractals program	11	***
BezSurf 2	Fred Fish	315	Create shaded 3D objects	10	***
DrawMap	Fred Fish	315	Generate maps of the world	10	***
Sprite Designer	AmigaNuts	1102	Create animated sprites	6	**
ImageLab	PDSoft	V518	Image processing program	12	****
Desktop video pack 2	Anglia PD	-	Various DTV utilities inc titler	17	***
EDUCATIONAL SOFTWARE					
Learn&Play	Riverdene	Mls637	Maths/Reflex/Logic	5	****
Simon	Deja Vu	APD135	Reflex/Memory	5	***
Space Maths	Deja Vu	APD135	Maths	5	****
TouchStones	Deja Vu	LPD18	Logic	5	****
Shapes	Riverdene	GAM907	Maths/Logic	5	****
Quingo	Deja Vu	LPD21	3 'R's	5	***
Treasure Search	Deja Vu	APD2	Maths/Logic	5	***
JigMania	Deja Vu	LPD13	Maths/Logic	5	****
Spell4Fun	AmigaNuts	1146	Spelling	9	****
Maths4Fun	AmigaNuts	1146	Maths	9	****
XTables	AmigaNuts	1146	Maths	9	****

FOR SUPPLIER INFORMATION ON ALL THE PRODUCTS LISTED ABOVE SEE UK PD HOUSES PAGE 138

BUYING ADVICE FOR SHOPPERS

Whether buying over the phone or at a local store, here's our advice on how to get what you want

BUYING IN PERSON

- Where possible, always test any software and hardware in the shop before taking it home, to make sure that it works properly.
- Make sure you have all the necessary leads, manuals or other accessories you need.
- Don't forget to keep your receipt.

BUYING BY PHONE

- Be as clear as possible when stating what you want to buy. Make sure you confirm all the technical details of what you are buying. Some things to bear in mind are version numbers, memory requirements, other required hardware or software and compatibility with your particular model of Amiga (that is, make sure you know which version of Kickstart you have).
- Check the price you are asked to pay, and make sure that it's the same as the price advertised.

- Check that what you are ordering is actually in stock.
- Check when and how the article will be delivered, and that any extra charges are as stated on the advert.
- Make a note of the date and time when you order the product.

BUYING BY POST

As with buying by phone, you should clearly state exactly what it is you are buying, at what price (refer to the magazine, page and issue number where it's advertised) and give any relevant information about your system set-up where necessary. You should also make sure you keep copies of all correspondence both to and from the company concerned.

MAKING RETURNS

Whichever method you buy by, you are entitled to return a product if it fails to meet any one of the following three criteria:

- The goods must be of 'merchantable quality'.
 - The goods must be 'as described'.
 - The goods must be fit for the purpose for which they were sold. If they fail to satisfy any or all of the criteria, then you are then entitled to:
 - Return them for a refund.
 - Receive compensation for part of the value.
 - Get a replacement or free repair.
- When returning anything, ensure that you have proof of purchase and that you return the item as soon as possible after receiving it. For this reason it is important that you check the hardware or software as soon as it is delivered to make sure everything you ordered is there and works as it is supposed to.

HOW TO PAY

Paying by credit card is the most sensible way, whether buying in person, by post or on the phone, because you may be able to claim the money from the credit card company even if the firm you ordered from has gone bust or refuses to help sort out your problem.

Otherwise, you should pay by crossed cheque or postal order – never send coins or notes through the mail.

GETTING REPAIRS

Always check the conditions of the guarantee, and servicing and replacement policy, so that you know what level of support to expect. Always fill in and return warranty cards as soon as possible, and make sure that you are aware of all the conditions contained in the guarantee.

BUYING PD

Even though PD software is relatively inexpensive, you should still apply the guidelines set out above, making sure that you confirm all orders as clearly as possible.

Shopping around is still important when buying PD because different houses charge different prices for the same disks. There is no set pricing structure for disks, but bear in mind that PD houses are, in theory, supposed to be non-profit making operations. **AS**

A CHECK LIST FOR MAIL ORDER BUYING

- 1 Make sure you know exactly what you want. Draw up a checklist of the specifications you are looking for and what you want it to be able to do. Check with the suppliers that their product matches your list
- 2 Will the product you have in mind work with your existing set-up, and anything else you are planning to buy?
- 3 Can you see a demonstration? Many products are on display at computer shows around the country.
- 4 Are there any hidden extras? Does it need 1Mb to run, or a hard disk?
- 5 What technical support is provided by the supplier? Does the manufacturer offer after sales advice? Check before you buy.
- 6 Check the guarantee terms. How long is the free warranty? What does it offer?
- 7 Draw up a list of these details and make them a condition of your order.
- 8 Check the price and delivery details when you order, and make a note of them.
- 9 Note down when you placed the order and who you spoke to.
- 10 When it arrives, check everything carefully. If anything is missing, don't use the product at all – contact the supplier. If it doesn't work, make the obvious checks such as the fuse. If it still doesn't work don't try to fix it – contact the supplier.

ADVERTISERS INDEX

1st Choice (Leeds)	66, 67
16 Bit Centre	108
316 Supplies	17
Accelerators Unlimited	68
Advanced Electronics	131
Anglia Pd	129
Arnor	116
Artworks	68
BCM	68, 76
BCS	89
Bitcon Devices	76
Coombe Valley Software	92
Delta Pi	78
Diamond	104, 105, 106
Digita	9
Digital Multimedia	68
Direct Computers	92
Dynamite	82, 83
Europress Software	IBC
Evesham Micros	74, 75
Futureworld	42, 43
George Thompson Services	73
Grapevine	73
Harwoods	98-101, 123
HIQ Ltd	4
Hobbyte	50, 51
Home Based Business	129
Hytec Computers	97
Jewel PD	129
Kontax Engineering Ltd	78
Kosmos Software	78
LCL	76
Magic Clip-Art Company	76
Merlin	IBC
MJC Supplies	84
Olympic Disks	131
Omega Projects	124
PD Soft	135
Phoenix	34, 35
Power Computing	26, 27, OBC
Roc Lobster	92
Silica Systems	137, 139, 145
Snap	131
Softstore	107
Startronics	129
Switchsoft	92
Trilogic	58, 59
Videoware	73
Weserve	6
WTS Electronics	11, 97
York Electronics	78

CITIZEN

ALWAYS A GOOD IDEA

Silica presents some great offers on the award winning range of high quality matrix printers from Citizen. Each Citizen printer is built in the UK to exacting standards, ensuring superb reliability and output. Our confidence in Citizen's quality is such that we are pleased to include a 2 year guarantee with every printer. Plus, if you buy a Citizen dot matrix printer from us, we will give you the Silica Printer Starter Kit (worth £29.38), **FREE OF CHARGE!**

FREE DELIVERY
Next Day - Anywhere in the UK mainland

FREE STARTER KIT
Worth £29.38 - With every Citizen dot matrix impact printer from Silica.

2 YEAR WARRANTY
Silica offers a 2 year warranty (including the dot matrix printer head) with every Citizen printer.

WINDOWS 3.0
Free Windows 3.0 driver, included with the Silica Starter Kit.

FREE COLOUR KIT
With every Prodol 9, Swift 9 and 224

FREE HELPLINE
Technical support helpline open during office hours.

MADE IN THE UK
Citizen printers are manufactured to high standards.

DOT MATRIX PRINTERS

INK JET AND NOTEBOOK

LOW PRICE 9 PIN PRINTER



- 144 CPS**
- Citizen 120D+ - 9 pin - 80 column
 - 144cps Draft, 30cps NLQ
 - 4K Printer Buffer + 2 Fonts
 - Parallel or Serial Interface
 - Graphics Resolution: 240 x 240dpi
 - Epson and IBM Emulation
 - Pull tractor & bottom feed
 - FREE Silica Printer Starter Kit**

£115

+VAT = £135.13 inc. PPI 2120

RRP £199
SILICA STARTER KIT £25
TOTAL VALUE: £224
SAVING: £109
SILICA PRICE: £115

The Citizen 120D printer comes supplied with a parallel interface as standard. If you require a serial interface instead, please state ref: PPI 2125 when placing your order with Silica.

9 PIN PRINTERS



300 CPS 80 COLUMN

- Citizen Prodol 9 - 9 pin - 80 column
- 300cps Draft, 80cps NLQ
- 8K Printer Buffer + 3 Fonts
- Parallel Interface
- Graphics Resolution: 240 x 240dpi
- Epson and IBM Emulation
- FREE Colour Kit
- FREE Silica Printer Starter Kit

RRP £149
SILICA PRICE: £119



192 CPS 80 COLUMN

- Citizen Swift 9 - 9 pin - 80 column
- 192cps Draft, 48cps NLQ
- 8K Printer Buffer + 3 Fonts
- Parallel Interface
- Graphics Resolution: 240 x 240dpi
- Epson and IBM Emulation
- FREE Colour Kit
- FREE Silica Printer Starter Kit

RRP £139
SILICA PRICE: £119

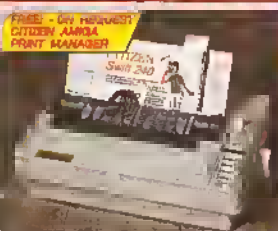


192 CPS 136 COLUMN

- Citizen Swift 9x - 9 pin - 136 column
- 192cps Draft, 48cps NLQ
- 8K Printer Buffer + 3 Fonts
- Parallel Interface
- Graphics Resolution: 240 x 240dpi
- Epson and IBM Emulation
- Colour Option Available
- FREE Silica Printer Starter Kit

RRP £249
SILICA PRICE: £249

24 PIN PRINTER



300 CPS 80 COLUMN

- Citizen Swift 240/240C - 24 pin - 80 column
- 300cps SD (15cpi), 240cps Draft, 80cps LO
- 8K Printer Buffer + 40K maximum
- 9 LO Fonts + 2 Scalable Fonts (8-40pts)
- 1 x Font Cartridge Slot - for plug in 'Style' Fonts
- Parallel Interface
- Graphics Resolution: 360 x 360 dpi
- Epson, IBM, NEC P20 & CEL Emulations
- Quarter Printing Facility
- Auto Cut Facility - Bi-directional LF
- Auto Emulation Detection
- Command View LV Front Control Panel
- Ultra Quiet Mode - 44.5 dB(A)
- Colour Printing Standard - Swift 240C
- FREE Silica Printer Starter Kit

RRP £239
SILICA PRICE: £239

NEW! SWIFT 2 SERIES

SWIFT 240M
MONO PRINTER
(COLOUR OPTION AVAILABLE)

SWIFT 240C
COLOUR PRINTER

RRP £239
SILICA PRICE: £239

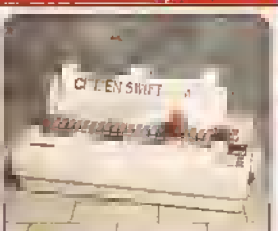
24 PIN PRINTERS



192 CPS 80 COLUMN

- Citizen 224 - 24 pin - 80 column
- 192cps Draft, 64cps LQ
- 8K Printer Buffer + 4 Fonts
- Parallel Interface
- Graphics Resolution: 360 x 360dpi
- Epson and IBM Emulation
- FREE Colour Kit
- FREE Silica Printer Starter Kit

RRP £269
SILICA PRICE: £199

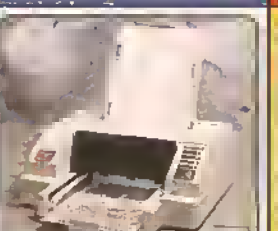


192 CPS 136 COLUMN

- Citizen Swift 24x - 24 pin - 136 column
- 192cps Draft, 64cps NLQ
- 8K Printer Buffer + 4 Fonts
- Parallel Interface
- Graphics Resolution: 360 x 360dpi
- Epson, IBM and NEC P6 Emulation
- Colour Option Available
- FREE Silica Printer Starter Kit

RRP £449
SILICA PRICE: £349

INKJET PRINTER

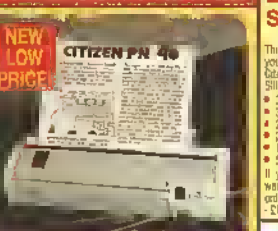


360 CPS 80 COLUMN

- Citizen Projel - inkjet - 80 column
- 360cps Draft, 120cps NLO
- 50 Nozzle Head - Whisper Quiet 47db(A)
- 8K Printer Buffer + 3 Fonts
- Optional HP Compatible Font cards
- Parallel Interface
- Graphics Resolution: 300 x 300dpi
- HP Deskjet plus emulation

RRP £609
SILICA PRICE: £359

NOTEBOOK PRINTER



64 CPS 80 COLUMN

- Citizen PN48 Notebook Printer
- Non-impact Printing on Plain Paper
- 53cps LQ - 4K Buffer + 2 Fonts
- Rear and Bottom Paper Loading
- Parallel Interface
- Graphics Resolution: 360 x 360dpi
- Powered from Mains, Battery or Car Adapter

RRP £329
SILICA PRICE: £219

FREE! STARTER KIT

This starter kit will help you to get you up and running with your new Citizen dot matrix printer from Silica Systems.

- 2x 3in x 5in A4 & B5 Drivers
- 2x Disk - Driver for Windows 3
- 2x Matrix Printer Cable
- 100 Sheets of Continuous Paper
- 100 Continuously Address Labels
- 5 Continuously Envelopes

If you already own a printer, and would like to buy 1 kit, you may order one for £2.50 (incl. PPI 2120) for £2.50.

AMIGA PRINT MANAGER
WORTH £14.10

The Amiga Print Manager dramatically increases print speed. Provides drivers for all Citizen printers and replaces Amiga's normal printer emulation system - giving a quicker, clearer more vibrant, graphics less busy. Easy to use with instructions.

Features include:

- Improved Image Smoothing
- Gamma/Colour Correction
- Print Spooling
- Colour Separation
- Reduces/Minimises Banding

The Amiga Print Manager is available free on request from Silica Systems with the Swift 9, 224 and 240 printers, or may be purchased (ref: ASC 4576) for £13.10 (PPI £14.10).

ACCESSORIES

SHEET FEEDERS

- PFA 1200 1200 £7.25
- PFA 1210 1210/2210/2410/2410 £7.25
- PFA 1220 1220/2220/2420/2420 £7.25

SERIAL INTERFACES

- PFA 1100 1100 £5.45
- PFA 1200 1200/2200/2400/2400 £5.45
- PFA 1700 1700/2700/2400/2400 £5.45

32K MEMORY EXPN

- PFA 1751 1240/2240/2440/2440 £12.10

PRINTER STAND

- PFA 1242 1242/2242/2442/2442 £24.95
- PFA 1243 1243/2243/2443/2443 £24.95

ORIGINAL RIBBONS

- 010 920 1200/2200/2400/2400 £2.15
- 010 920 1210/2210/2410/2410 £2.15
- 010 920 1220/2220/2420/2420 £2.15
- 010 920 1230/2230/2430/2430 £2.15
- 010 920 1240/2240/2440/2440 £2.15
- 010 920 1250/2250/2450/2450 £2.15

COLOUR KITS

- PFA 1256 1256/2256/2456/2456 £15.25
- PFA 1257 1257/2257/2457/2457 £15.25

PN48 ACCESSORIES

- PFA 1144 PN48 Driver £14.70
- PFA 1145 PN48 Cable £20.25
- PFA 1146 PN48 Cartridge £14.70

Accessories prices inc. VAT & delivery.

SILICA SYSTEMS OFFER YOU

- FREE OVERNIGHT DELIVERY:** On all hardware orders shipped in the UK mainland.
- TECHNICAL SUPPORT HELPLINE:** Team of technical experts at your service.
- PRICE MATCH:** We normally match competitors on a 'Same product - Same price' basis.
- ESTABLISHED 14 YEARS:** Proven track record in professional computer sales.
- £12 MILLION TURNOVER (with 60 staff):** Solid, reliable and profitable.
- BUSINESS + EDUCATION + GOVERNMENT:** Volume discounts available 081-309 0888.
- SHOWROOMS:** Demonstration and training facilities at our London & Sidcup branches.
- THE FULL STOCK RANGE:** All of your requirements from one supplier.
- FREE CATALOGUES:** Will be mailed to you with offers + software and peripheral details.
- PAYMENT:** Major credit cards, cash, cheque or monthly terms.

Before you decide when to buy your new printer, we suggest you think very carefully about WHERE you buy it. Consider what it will be like a few months after you have made your purchase, when you may require additional peripherals and accessories, or help and advice with your new purchase. And, will the company you buy from contact you with details of new products? At Silica Systems, we ensure that you will have nothing to worry about. We have been established for almost 14 years and, with our unrivalled experience and expertise, we can now claim to meet our customers' requirements with an understanding which is second to none. But don't just take our word for it. Complete and return the coupon now for our latest FREE literature and begin to experience the Silica Systems Service.

MAIL ORDER HOTLINE
081-309 1111

SILICA SYSTEMS

MAIL ORDER: t-4 The Mews, Hatherley Rd, Sidcup, Kent, DA14 4DX Tel: 081-309 1111
Order Lines Open: Mon-Sat 9.00am-6.00pm No Late Night Opening Fax No: 081-309 0808

LONDON SHOP: 52 Tottenham Court Road, London, W1P 0BA Tel: 071-580 4000
Opening Hours: Mon-Sat 9.30am-6.00pm No Late Night Opening Fax No: 071-523 4737

LONDON SHOP: Selldridge (1st Floor), Oxford Street, London, W1A 1AB Tel: 071-229 1234
Opening Hours: Mon-Sat 9.30am-6.00pm Late Night Thursday until 8pm Extension: 3014

SIDCUP SHOP: t-4 The Mews, Hatherley Rd, Sidcup, Kent, DA14 4DX Tel: 081-302 8811
Opening Hours: Mon-Sat 9.00am-5.30pm Late Night: Friday until 7pm Fax No: 081-309 0017

To: Silica Systems, AMSHP-1092-55, t-4 The Mews, Hatherley Rd, Sidcup, Kent, DA14 4DX

PLEASE SEND A BROCHURE ON THE CITIZEN RANGE

Mr/Ms/Miss/Ms: Initials: Surname:

Company Name (if applicable):

Address:

Postcode:

Tel (Home): Tel (Work):

Which computer(s), if any, do you own?

E&OE - Advertised prices and specifications may change - Please return the coupon for the latest information.

Free - ten copies of Home Accounts 2

Thanks to Digita International, we have £550 worth of prizes to give away in the form of Home Accounts 2, the excellent financial package

It is said that a day will come when every man (and woman too, one assumes) will be held accountable for his (or her) actions. For most of us this day invariably seems far off, hence we rarely give it any thought. No, our need to appease a secular arbiter is more pressing than any moral imperative, balanced as our actions are, not on the scales of virtue and sin, but on those of credit and debt. This judge, whose words we await with awe, since they can consign us either to bliss or damnation - this judge is our bank manager.

And so what better way of keeping this omnipotent being happy, of being scrupulously aware of all our earthly transactions, than with a computerised accounting system? Digita International's *Home Accounts 2* fits the bill nicely; with its attractive, easy to use interface, its ability to handle time-based regular transactions such as direct debits, and its handling of VAT, it more than deserves its price tag and the acclaim it has received.

Digita has kindly donated ten of these packages for us to give away, to aid you in keeping body and soul together here on Earth.

Have a go at the three questions below and send your answers on a

postcard or the back of a sealed envelope to:
Anodyne Accountancy... Not
Amiga Shopper
29 Monmouth Street
Bath BA1 2DL
The closing date is October 12. Only one entry per household will be permitted. Entries from bank managers will be disqualified. **AS**

THE CHALLENGE

QUESTION 1

What does HIP, as used in *Home Accounts 2*, stand for?

- a) Happy Input Process
- b) Highly Intuitive Parsing
- c) Human Interface Protocol

QUESTION 2

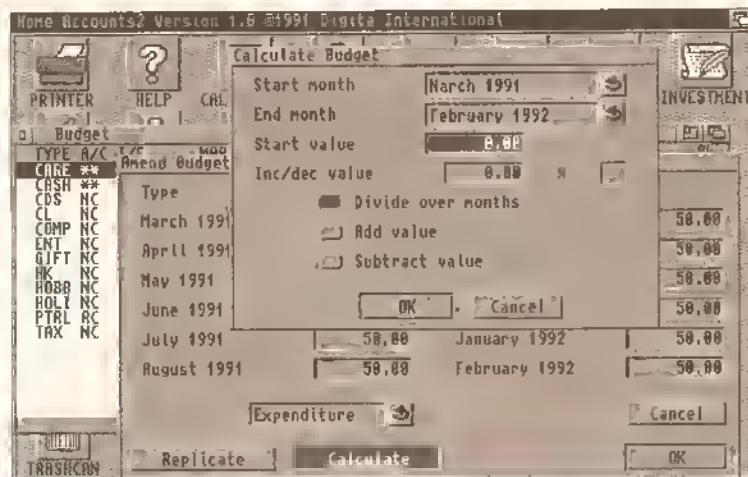
What is the missing word in 'brigands demand your ... or your life, whereas women require both'?

- a) Money
- b) Sword
- c) Sustenance

QUESTION 3

Name the EEC's official currency.

- a) Emu
- b) Ecu
- c) Franc



Get your house in order with *Home Accounts 2*. Its facilities to handle regular transactions such as direct debits make it an ideal salve for money worries

EASY PEASY COMPO!

The lucky winners of August's competition are: Zoe Beale of Herts, Ben Lamb of Suffolk, Mathew Dodd of Essex, C Spear of South Glamorgan, DJ Goldsmith of Leicester, Pamela Hammour of Stockport, BA Briscoe of Cheshire, Trevor Cobbe of Leicester, Chris Millar of Dumfries, Chris Hendry of Lancashire, D Brown of Tyne & Wear, Mark Ireland of Kent, Peter Bain of South Wales, EA Limby of East Sussex and Steve Harrison of Cheshire. Congratulations - your copies of *Easy Amos* are on their way.

IN NEXT MONTH'S ISSUE

- The future of the Amiga - the country's top Amiga experts debate the current and future state of Amiga technology and offer their opinions as to what Commodore must do next. If you're interested in the future of your machine, you can't afford to miss this special feature
- The definitive Amiga Shopper PC emulator round-up. Do you need one? If so, which is the best?
- With PCs encroaching on one side, and consoles on the other, Toby Simpson, professional games developer, looks at what the Amiga has to offer over the consoles.

Plus regular columns on Amiga Answers, video, AmigaDOS, desktop publishing and much more

On sale Thursday, October 8

GUARANTEE YOUR COPY OF AMIGA SHOPPER - RESERVE IT AT YOUR NEWSAGENT

Please reserve/deliver me a copy of **Amiga Shopper**

Name _____

Address _____

TO THE NEWSAGENT - *Amiga Shopper* goes on sale the first Thursday in each month. It's by Future Publishing and available from your local wholesaler.



AMIGA 600 RANGE...

'The new addition'
The Amiga Family has just grown! Not only can you have the A500 Plus Cartoon Classics Pack, but now, you have two innovative Amiga 600 models too... with or without a Hard Disk Drive built-in!

Plan, unrivalled by any other home computer. There's a Help Line to assist you with those minor problems, and on occasion of something more serious, you'll be pleased that an engineer will make a call to your home to affect a repair or even replace the unit completely!

that for your total 'peace of mind'?



AMIGA 600 **AMIGA 600-HD**

1.5" Floppy Disk Drive & Free Software. **1.5" Floppy Disk Drive & 20Mb. Hard Drive.**

The 600 range is so new... the details given have all yet to be completely. By the time this magazine is on sale we are likely to be in the position of confirming with more detail.

Options as we know at the time of going to press:

- Impact Design, Kickstart/Workbench 2.05, 3.5" Internal 880K Hard Drive, Built-in TV Modulator, 20Mb. Hard Disk Drive [2.5" 600-HD model only], 1Mb RAM as standard with an option to upgrade simply to 2Mb, with RAM expansion in 'trapdoor', 2 Joy-stick ports, Full Colour Composite Video output, 'Smart Card' for saving games on ROM to be loaded instantly... no more waiting!
- Available for upgrade post [eg. RAM cards etc], 4096 Colours, Standard Parallel and Serial ports for printers etc.

AMIGA 600 CD-ROM DRIVE...

Available Soon!

to load and play CDTV software on the new Amiga 600-HD computers. New Interactive Multimedia on your CD discs!! Plus... you can play your favourite music CD Discs G discs!! too!

Call soon for further news about the equivalent planned CD-ROM drives for Amiga 500 and Plus computers.

AMIGA 500 PLUS PACK...

AMIGA 1Mb 500 PLUS CARTOON CLASSIC PACKAGE INCLUDING ALL THE FOLLOWING...

NEW Amiga 500 PLUS Keyboard with 1Mb RAM and a 1Mb 3.5" Disk Drive, Mouse, TV Modulator, Leads, Manuals, Workbench Disk/Manuals etc. and featuring...

- 4096 Colours, Digital Stereo Sound, Multi Tasking, Speech Synthesis and more!

LOWEST EVER PHONE NOW!

ONLY WHILST LIMITED STOCKS LAST!

AMIGA CDTV...

NEW CDTV PACK INCLUDING TV, KEYBOARD, MOUSE AND 3.5" FLOPPY DRIVE

Only... £549.99

of CDTV accessories are now coming on line, please phone to check availability.

- LEAD/BOARD 88 Key QWERTY, plugs into the CDTV. £49.95
- MOUSE Two wired remote control, £39.95
- FRONT/ALL Includes battery never feature
- DRIVE Infrared remote control with sockets for two standard joysticks or standard mouse £79.95
- DRIVE Allows loading of compatible Amiga software. Rack mountable. 880K capacity. £99.95
- DRIVE CDTV compatible to not taking block. £49.95

Amiga Peripherals at Perfect Prices...

star DOT MATRIX PRINTERS

	No. Pins	Dot	SPEED	Dot/Sec	No. Pages	Column	
LC 20 Mono	9	240	150/38	8	4	80	£139.99
LC 200 Colour	9	240	185/40	8	16	80	£199.99
LC 24-20 Mono	24	360	230/75	10	16	80	£209.99
LC 24-200 Mono	24	360	220/55	10	7	80	£269.99
LC 24-200 Colour	24	360	220/55	10	30	80	£379.99
XB 24-200 Col	24	360	275/80	18	29	80	£379.99
XB 24-250 Col	24	360	275/80	18	76	136	£454.99

CITIZEN

	No. Pins	Dot	SPEED	Dot/Sec	No. Pages	Column	
1200+ Mono	9	240	120/25	2	4	80	£139.99
SWIFT 9 Mono	9	240	160/40	4	8	80	£189.99
SWIFT 9 Colour	9	240	160/40	4	8	80	£194.99
224 Mono	24	360	160/53	4	8	80	£219.99
224 Colour	24	360	160/53	4	8	80	£249.99
SWIFT 24E Mono	24	360	180/60	7	8	80	£279.99
SWIFT 24E Colour	24	360	180/60	7	8	80	£279.99

star DOT MATRIX PRINTERS

OTHER TYPES OF PRINTERS

STAR SJ 48 STARJET PRINTER £239.99
Near silent Inkjet Printer similar to R1010e but with Epson LQ10BM Proprietary emulations 360dpi. 100cps. 28K Buffer.

CITIZEN PN48 NOTEBOOK PRINTER £269.99

STAR LASERPRINTER 4 MK.3 NEW £769.99

STAR LASERPRINTER 4 STARSRIPT £1069.99
Postscript compatible laser printer... Brilliant Quality Print!

star DOT MATRIX PRINTERS

	5 Pack Mono	5 Pack Colour
Star LC10020	£4.75	£19.95
Star LC200	£6.49	£29.95
Star LC 24/200	£6.99	£32.99
Star XB Printers	£4.99	£12.99
1200+ Swift24	£4.99	£12.95
1200+ Swift24	£4.99	£12.95
Swift24/2224/24E	£16.45	£71.95

star DOT MATRIX PRINTERS

GENUINE ACCESSORIES

	Printer	LC10020	LC200	LC 24/200	XB 24/200
Sheet Feeder	£69.99	£69.99	£69.99	£99	£149
Buffer L12	N/A	£32.99	£64.99	£32.99	
Unit Card	N/A	£27.99	£54.99	£27.99	
1200+ Cnt Sheet Feeder				£44.99	
1240 Swift 924 Simulatio Sht Feeder				£44.99	
1240 Swift 924 Auto-Sheet Feeder				£44.99	
1240 Swift 924 Parallel Sht Feeder				£44.99	
1240 Swift 24-35K RAM Expansion				£18.99	
Font Cards Swift 24 (6 Different Ssets)				£39.99	

CITIZEN

STARTER PACK £9.99

when purchased with a Citizen Printer

200 - Sheets of Continuous Paper, 3.5" Second Disk Drive, Enabler/Disable Switch, 1000 Count, 5 - Continuous Envelopes, 100 - Count, 5 - Continuous Labels, 1 - Amiga/Atari ST Printer Driver 3.5" Diskette

(£7.95 if purchased separately)

PRINTER FREEBIES...

WITH EVERY PRINTER (EXCEPT THOSE SHOWN WITH AN (*) YOU WILL GET THE FOLLOWING INCLUDED:

- FREE CHARGE
- QUALITY DUST COVER
- 2 PART PRINTER STAND
- LEAD TO YOUR AMIGA

(*) = all FREE items EXCEPT in date version

FREE ENTRY INTO THE MERLIN PRIZE DRAW

With each hardware purchase you will receive a FREE ENTRY form for our Euro Disney Holiday Competition.

*Full Details available on written request to Merlin Express Ltd. Please include a SAE.

Euro Disney is the Copyright of The Walt Disney Corporation

AMIGA SECOND DRIVES

MERLIN 3.5" DISK DRIVE £56.99
3.5" Second Disk Drive, Enabler/Disable Switch, 1000 Count, 880K Formatted Capacity, No external power supply is needed. Through-port. THIS IS ONE OF OUR BEST SELLERS!

ROCLITE 3.5" DISK DRIVE, ULTRA SLIM & LIGHT £64.99
Innovative remote control with sockets for two standard joysticks or standard mouse

EDWIN DRIVE 1011 3.5" 2nd DRIVE £79.99

CUNANA 3.5" CAX35 DRIVE £57.99
Enabler/Disable switch, Throughport, Extra Long Cable.

GVP

Hard Disk Drives, Memory Upgrades & Accessories

GVP Impact Series II HD8 Hard Drives

GVP's Amiga hard drives have a reputation for quality and reliability with an excellent specification. Simply plugs into your Amiga A500 or 500 Plus side port. GVP Hard Drives can be supplied in populated or populated to 2Mb, 4Mb, or 8Mb using a combination of plug-in SIMMS memory chips.

*** AMIGA A500 GVP HARD DRIVES...**

GVP 52Mb. Std Unpop. NEW LOW... £284.99
GVP 105Mb. Std Unpop. NEW LOW... £128.88
GVP 120Mb. Std Unpop. NEW LOW... £299.99

*** AMIGA A1500 GVP HARD DRIVES [Internal]**

GVP 52Mb. Std Unpop. NEW LOW... £414.99
GVP 120Mb. Std Unpop. NEW LOW... £634.99
GVP 240Mb. Std Unpop. NEW LOW... £1164.99
GVP 420Mb. Std Unpop. NEW LOW...

GVP HARD DRIVES POPULATION [RAM u/g]

Population to 2Mb (2x1Mb SIMMS) £64.99
Population to 4Mb (4x1Mb SIMMS) £128.88
Population to 8Mb (2x4Mb SIMMS) £299.99

GVP PC EMULATOR FOR AMIGA's

Fits internal slot-size of GVP Series II Hard Drives. Includes 16MHz 786 CPU and is compatible with MS DOS 3.2 or later. Runs lots of DOS applications software in hiding Windows. £239.99

GVP DIGITAL SOUND STUDIO

Fits the Amiga A500/1500/2000/3000 range. High quality 8-bit sampler with stereo inputs & variable recording level. Up to 51000 samples/sec in stereo. Plugs into the Amiga's parallel port. Special effects include echo, mix, re-sample, filter, and more! 4-Track sequencing & MIDI support. Save in IFF, RAW or SONIX formats. Can be SoundTrax files on stand alone song files to play separately from DSS. Full 150 page user manual. £59.99

GVP 1500/2000 ACCELERATORS

These accelerator boards fit the Amiga 1500/2000 range.

- G-Force 030-25MHz + 1Mb £579.99
- G-Force 030-40MHz + 4Mb £949.99
- G-Force 030-50MHz + 4Mb £1349.99

AMIGA SUNDRIES

MOUSE MAT High quality, save your mouse from dirt! £3.95

DESK COVER High quality vinyl covers for hardware... £5.95 each

AMIGA keyboard, printers, monitors etc. etc.

DISK STORAGE BOXES High quality, smoked perspex lid fully lockable, complete with dividers in two capacities...

- 40 CAPACITY 3.5" Disks £4.99
- 50 CAPACITY 3.5" Disks £6.99

DISK LIBRARY CANS Plastic case for 10 disks, 3.5" £8.99

PRINTER STANDS 3 Part plastic, paper fits under. £9.99

MERLIN WIZARD STICK Great quality microswitched joystick, robust & long-life, superb control. Other joysticks included! £9.99

AMIGA 500 CONTROL CENTRES From £19.95

NAKSHA SCANNING The first of its kind! £109.99

NAKSHA MOUSE-Free Operation Still with mouse but SQUEEZE! £29.99

SQUEEZE! MOUSE-Free Operation Still with mouse but SQUEEZE! £16.95

AMIGA SOFTWARE Games, Education and Business software is always available at discount prices! phone calls & ask for prices.

AMIGA BOOKS Covering everything Amiga! Phone for details.

PENAL V.F. £79.99 for just £59.99 if bought with h/w

WORDWORTH-W.F. packed with features £99.99

STORAGE PERSONAL 2.0 Brilliant Database at a VERY SPECIAL PRICE! Only from Merlin... £29.99

PLUS LOTS OF OTHER ACCESSORIES TOO MANY TO LIST!

AMIGA UPGRADES

Increase the power of your Amiga quickly & easily!

1Mb Memory Upgrade for Amiga A500 Plus £44.99
Simply fits in the expansion slot of your Amiga! (See £39.99 with an Amiga ROM SHARER FOR ALL 500'S AND PLUS AMIGAS)

ROM SHARER FOR ALL 500'S AND PLUS AMIGAS £72.99
Requires fitting internally and a basic knowledge of Amiga hardware. Allow you to use either of the following ROM chip sets to change chip.

Version 1.3 Chips £9.99 **Version 2.04 Chips** £49.99

Commodore A501 4.5Mb. RAM Upgrade for A500 Amigas £49.99

Commodore A501 4.5Mb. RAM Upgrade for A500 (1.3) Amigas £39.99

Commodore Version 2 Kickstart/Workbench Upgrade Pack £79.95 with Workbench/Extra/Fonts disks & Manuals

AMIGA 10 GAMES PACK £24.99
Dungeons, Dragons, E-Moria, Kid Glove, Gaid a Monster Slam, Powerplay, RVP Florida, Shuffle Pack, Microscope Soccer and more of Babel

AMIGA 15 GAMES PACK £34.99
As shown but also, Skelton, Casino Riddle, Salad & Gravel, 3000 Legends and Table Tennis

COMPENDIUM SIX EDUCATIONAL PACK £29.99
For 4-12 year old children. Kids Type, Calendar Quiz, Weather Watcher, Worms & Numbers, Game Set & Match and Who is it? When is it?

NOTES: the above prices are based on purchasing WITH an Amiga

MERLIN SORCERERS PACKS

AMIGA STARTER PACK £19.99
Mouse Mat, Dust Cover, Ten Blank Disks in a Plastic Library Case, Good Quality Joystick...

AMIGA 10 GAMES PACK £24.99
Dungeons, Dragons, E-Moria, Kid Glove, Gaid a Monster Slam, Powerplay, RVP Florida, Shuffle Pack, Microscope Soccer and more of Babel

AMIGA 15 GAMES PACK £34.99
As shown but also, Skelton, Casino Riddle, Salad & Gravel, 3000 Legends and Table Tennis

COMPENDIUM SIX EDUCATIONAL PACK £29.99
For 4-12 year old children. Kids Type, Calendar Quiz, Weather Watcher, Worms & Numbers, Game Set & Match and Who is it? When is it?

NOTES: the above prices are based on purchasing WITH an Amiga

Commodore AMIGA 1500's

AMIGA 1500 COMPUTER PACK
BRAND NEW 1500 Pack - Ideal for both home and business! Central Processing Unit (CPU), 1Mb RAM, 1 x 3.5" floppy disk drive, 4 Expansion Slots to take all Amiga 2000 Peripherals. With Numeric Key Pad, 4 Colour Keys, 2 Bonus Amiga Mouse.

NEW VERSION WITH ROM 2.04

AMIGA 1500 (As detailed) + 10MB Monitor £549.99
AMIGA 1500 (As detailed) + 10MB Monitor £814.99
AMIGA 1500 (As detailed) + 10MB Monitor £749.99

PHILIPS CM8330/H COLOUR MONITOR

14" Stereo Colour Monitor with Green Screen Switch AND... With 12mhz. on site maintenance

Monitor Dust Cover £5.05
AV7300 TV Tuner £79.95
Unit/Monitor Stand £11.95

PHILIPS Tilt Swivel Stand...
• CM8333 M21 £14.05
• CM8333 M21 £14.05

FREE... Dust Cover and Lead to your Amiga... from Merlin

PHILIPS TELEVISION MONITORS

A great alternative to a dedicated monitor that allows you to watch TV programmes too!

BRAND NEW PHILIPS RANGE OF TV'S WITH ALMOST MONITOR QUALITY OF OUTPUT! CHOOSE FROM THREE MODELS:

- 2000 Characters High Definition PST specification for use as a monitor or TV!
- Both a high quality TV and a monitor. Full two year warranty!

PHILIPS 1331 - 15" remote control with dephaser £239.95

PHILIPS 1331 - 15" remote control with dephaser £239.95

PHILIPS 1331 - 15" remote control with dephaser £239.95

OTHER TV'S AND MONITORS

All of the monitors and TV's mentioned below are supplied with the necessary leads to your Amiga.

Remember dedicated monitors give a better quality output from your computer. But TV's are for better value normal down the TV sets.

COMMODORE 10845 COLOUR MONITOR £269.99

PROTAR VISTO MONITOR Based on Philips' CM833 £279.99

GOLDSTAR TV MONITOR A real alternative to dedicated monitors which gives you normal TV as well!! £199.99

DELIVERY

Most items are shipped by post by 1st class Monday and Tuesday for a small fee, but for large orders direct delivery. We have to be able to do this by a certain time in the week as follows: **MONDAY 09.00** add £12.00 to order, **TUESDAY 10.00** add £12.00 to order, **WEDNESDAY 10.00** add £12.00 to order, **THURSDAY 10.00** add £12.00 to order, **FRIDAY 10.00** add £12.00 to order, **SATURDAY 10.00** add £12.00 to order, **SUNDAY 10.00** add £12.00 to order.

WARRANTY

Merlin Express Limited has a 30 day warranty on all hardware sold by us. If you are not satisfied with your purchase, please return it to us within 30 days of purchase. We will refund your money, less a small handling charge. If you are not satisfied with your purchase, please return it to us within 30 days of purchase. We will refund your money, less a small handling charge.

PLEASE NOTE...

Whilst every effort is made to ensure that all items are of the highest quality, we cannot accept liability for any damage or loss of data caused by the use of our products. We will not be responsible for any damage or loss of data caused by the use of our products. We will not be responsible for any damage or loss of data caused by the use of our products.

MERLIN EXPRESS LIMITED

Merlin

Great! This is the best! Deals!

MERLIN EXPRESS LIMITED

DEPT. AM, UNIT C7, ROPEWALK INDUSTRIAL CENTRE, STATION ROAD, WILKESON, DERRYSHIRE, D17 5HX.

24 HOURS 00602 441442

POWER

COMPUTING

Power Scanner v2.0



Features

100-400 DPI scanning resolutions
64 Greyscales
Thru'put for printer

Software

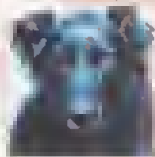
Full screen image editor
Interface mode on/off
Edit true greyscale & colour images
Fully multi-tasking

Editing

Cut rectangle, cut lasso, crop, flip, rotate, scale,
draw lines, circles, boxes, ellipses, freehand,
zoom mode

Scanning

Unique 'True feel' real time scan mode - know
instantly if you are scanning the image too quickly
Automatic selection of 100-400 DPI
Produce true greyscale images



Actual Amiga Screen Shots
Amiga can only display 16 greyscales

£99 inc.VAT
GREYSCALE

£239 inc.VAT
COLOUR

PC880B Power Drive



£65

Viruses, diskswapping, clicking drives, disks which
won't back up. Is there no end to the whingeing
of the Amiga user?

At Power, we want to tell you just where you can
stick your disks and worries. In fact we'll tell you. The
slot in this picture belongs to our PC880B, the first
intelligent disk drive. Insert a disk.

Now you can back up at lightning speeds using
the inbuilt Blitz Amiga hardware*, with free soft-
ware, (even if the disk is Atari or PC) and if your
computer has a virus the PC880B will stop it being
written to the bootblock of any of your drives,
though you can still save files as normal.

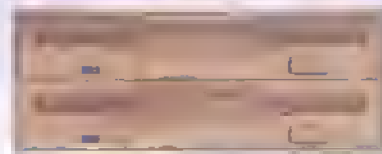
When you do not want these features, switch them
off and the PC880B will sit quietly, without click-
ing, pretending to be simply an extra drive.

The PC880B, the only drive to introduce Blitz
Amiga, the Power anti-click device and to combat
viruses, is only available direct from Power, priced
at just £65

We have noticed how pricey unintelligent drives
are. Perhaps, it's your turn to tell people where to
stick it.

*Due to the precision nature of the Blitz, some high density disks may be required
with some internal drives.

Dual Drive



Blitz copier built-in (switchable)
Virus Blocker built-in (switchable)
Anti-click & PSU included

£125

Blizzard Turbo Memory Board for A500/A500+

Expand up to 8MB (0k installed)
Memory & 68000 CPU can run with doubled clock
rate of 14.28MHz
Fast 68000 processor already installed on board
Fully autoconfiguring, DMA compatible fast RAM
Optical 512K shadow RAM on extra memory bank
for shadowing the operating system out of ROM or
from disk

£169

New Kick-Off Automatic ROM sharer

Kick-Off is the latest Amiga add-on from Power.
One of the most advanced Kickstart ROM sharers
available, a clever design onto a small reliable board
Fits these Amigas - A500, A500+, A600, A1500/2000
Kickstart ROM can be selected from the keyboard
No messing about with switches
Only one compact board to plug-in
No "CIA adaptors" or other trailing wires
Jumper to select which ROM boots on switch-on
Compatible with old Amiga board revisions
Simple internal fitting*

*Kick-Off requires the full to be removed from the Amiga. This may invalidate your warranty.

ROM share only £19.95 ROM share inc. Kickstart v1.3 £49.95
ROM share inc. Kickstart v2.10 £55 ROM share inc. v1.3 & v2.10 £85

Supra Modems

Supra Fax Modem Plus £136
Supra Fax Modem v32 BIS £295
Supra Modem 2400 (External) £91
Supra Modem 2400 Plus (External) £111
Supra Modem 2400 ZIplus (Internal) £134

Name

Description

Address

Postcode

Credit Card No.

Telephone No.

Expiry Date

--	--

System Owned

Signature

I enclose a cheque/PO for
£

Make cheques payable to Power Computing Ltd
Fill in your order form and send it to:
Power Computing Ltd
Unit 8 Railton Road
Winburn Road Industrial Estate
Kempston Bedford MK42 7PN

Ring your credit card order on 0234 843388
or fax on 0234 840234

All prices include VAT, delivery and are subject to change.
Specifications are subject to change without notice.
Next day delivery £4.50 (UK mainland only). All trademarks acknowledged.

Distributor for Power Computing in Italy: DOR S.R.L. 00142 Roma
Via Duomo 10/11 tel 06/519480-519481 fax 519966

Power Computing France: 111 Avenue 75011 Paris France
Tel 01 45701000 fax 01 45701035

Power Computing U.S.A.: 21 South 5th Street Suite 000, Philadelphia PA
19106